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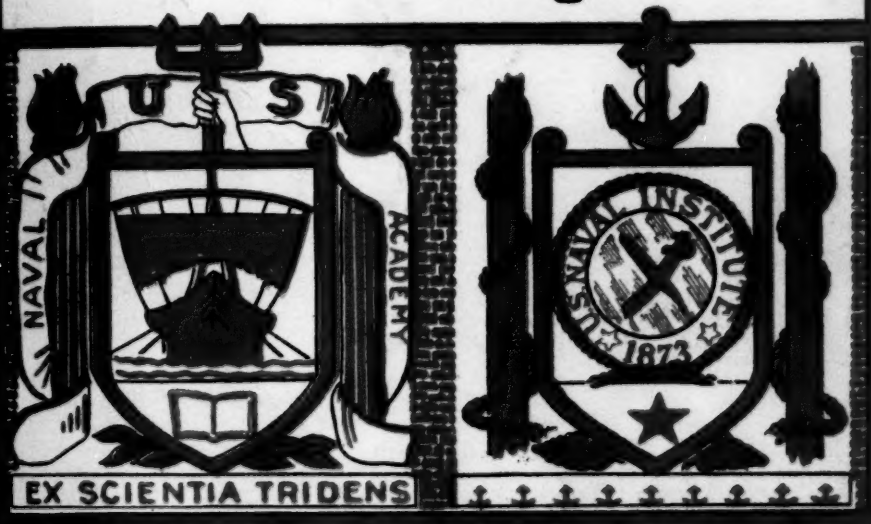

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Edited by C. C. Gill

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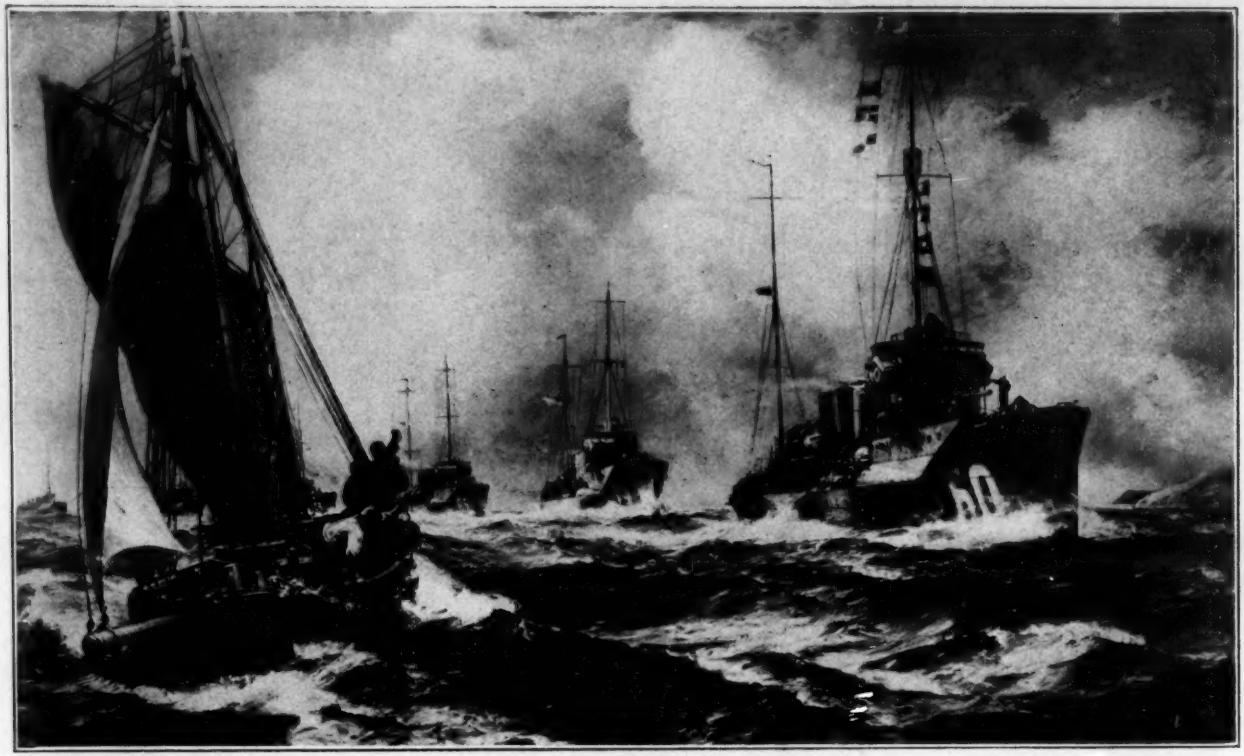

THE RETURN OF THE MAYFLOWER
Depicting the arrival of Captain Taussig's division at Queenstown
A reproduction of the painting by Bernard F. Gribble

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DESTROYER EXPERIENCES DURING THE GREAT WAR

By Captain J. K. Taussig, U. S. Navy

A dreadful sound is in his ears: in prosperity the destroyer shall come upon him.—(Job, XV, 21)[1]

I. THE FIRST SIX

Being a narrative of the experiences incidental to the crossing of the first United States destroyer division sent abroad for the purpose of operating against the German submarines in the Great War.

At Base 2

The United States Fleet under the command of Admiral Henry T. Mayo, had been assembled at Yorktown, Va., for several days, when, on the evening of April 6, 1917, this signal was flashed from the flagship *Pennsylvania:*

"Mobilize for war in accordance with department confidential mobilization plan of March 21."

[1]This quotation from the Bible was sent to me by Rear Admiral Goodrich, U. S. Navy. I quote from his letter:

"Apropos of your work during the World War, I wonder whether the Hun ever reads or, if he reads, ever heeds the Bible.

These are the words of Eliphaz, the Temanite, (Job XV, 21).

Pass this along among your destroyer colleagues and show it, besides others, to Admiral Sims."

Depicting the arrival of Captain Taussig's division at Queenstown
A reproduction of the painting by Bernard F. Gribble

We of the fleet had felt for some time that war was inevitable. When diplomatic relations were severed in February, the fleet was in West Indian waters, carrying on the usual winter maneuvers. The Commander-in-Chief immediately took all necessary precautions to guard against surprise attacks by submarines. Outposts, pickets, and patrols were established. The ships were darkened at night. During the passage to Hampton Roads the fleet proceeded cautiously by an unfrequented route. A screen of destroyers surrounded the big fighting ships. From Hampton Roads it moved up the Chesapeake to the mouth of the York River. Here Base 2 was established.

A boom was thrown across the river; outposts and pickets were posted; a destroyer patrol extending from Eastport to Key West was placed in operation. All these things were purely defensive measures.

There were no evidences of preparations for an offensive movement, and in fact, no such preparations had been made. It was a decidedly discouraging outlook, especially to us in the destroyers. From what little we had heard concerning anti-submarine operations, it was known that the destroyers were the best antidote for the poisoning. It therefore was disheartening to think we were destined for nothing more than to guard our battleships at home and to patrol our coast at a distance of three thousand miles from the scene of active operations. There is nothing more trying and more monotonous than looking for an enemy which is known not to be anywhere around.

My own ship, the *Wadsworth*, had been detailed to make the mail trips between Base 2 and Hampton Roads. This was much better under the circumstances than swinging at anchor as a picket or steaming wildly up and down the coast as a patrol. It was most interesting in that every morning we carried as passengers from Old Point Comfort, one or more officers, some of them old friends, who were on their way to the fleet. There were numerous discussions as to the future employment of the ships. When an opinion was expressed, which was usually the case, it was always to the effect that the fleet would continue as at present—that is, doing nothing in an offensive way. . . . "It was evident that such help as the United States would give the Allies was to be moral and financial. . . . We would send them

munitions but we would not fight. . . . Our fleet was to remain in home waters to guard itself against submarines which were three thousand miles away. . . . Then if the Germans beat the Allies we would be ready to protect the United States . . . . The attitude was a defensive one. . . . It was strategy backwards in that it was division of effort instead of concentration. . . . It was the kind of policy that had lost wars for other nations in the past. . . . If adhered to it would lose us this war" . . . . and so forth and so on.

On the morning of April 13, two of the passengers on the *Wadsworth* were Admiral Mayo and his Chief of Staff, Captain Orton P. Jackson. They were returning from Washington. It did not seem possible that Admiral Mayo was the conveyor of news which was of much moment to the personnel of the destroyer on which he was a passenger. Neither from him nor from Captain Jackson was there the slightest intimation that something unexpected was about to take place.

It so happened that my family were in Norfolk, and, as the *Wadsworth* anchored at Hampton Roads every night, I frequently visited them. On the afternoon of the day when Admiral Mayo returned to Base 2, the *Wadsworth* as usual carried the fleet mail to Hampton Roads; and I, as usual, proceeded to Norfolk. So little of the war spirit had pervaded that place, and so little had we of the Navy felt its pressure, that my plans for the night contemplated attending one of those delightful dances known as the Norfolk German. When about to leave the house shortly after nine o'clock the telephone rang. The automobile was waiting outside. Someone else could answer the phone. We were just starting when the door opened and a voice called:

"Long distance from Old Point for Captain Taussig."

Returning to the house and taking up the receiver I found myself in communication with Lieutenant Falge, one of the officers of the *Wadsworth*. He was talking from the Chamberlin Hotel.

"Captain," he said, "I have news for you. The *Jacob Jones* has just arrived bringing orders for the *Wadsworth* to sail at daylight for New York, to fit out for distant service."

"Have a boat at the dock for me at eleven o'clock," was my reply.

Hanging up the receiver, I returned to the automobile. Instead of going to the ball, I was taken to the Old Point car. The war was a reality after all.

On reaching my ship at midnight and after reading the order, directions were given to be ready to get under way at 5:30 a. m. The order follows:

M-51-30 DESTROYER FORCE, ATLANTIC FLEET,
U.S.S. *Seattle*, Flagship,
13 April, 1917.

CONFIDENTIAL:

From: Commander, Destroyer Force.
To: Commanding Officer, U.S.S. *Wadsworth*.

SUBJECT: Movement orders.

1. The *Wadsworth* is hereby relieved of her present duties in connection with mail. Proceed at daylight, April 14, 1917, to Navy Yard, New York. Dock and expedite all necessary preparations for special service.

2. The *Porter, Davis, Conyngham, McDougal* and *Wainwright* are expected to join you at Cape Henry and proceed on the same duty.

3. Further instructions will be forwarded later.

/s/ ALBERT GLEAVES

The Commanding Officers of the destroyers composing this detail were:

(60) *Wadsworth* .....Commander Joseph K. Taussig.
(59) *Conyngham* .....Commander Alfred W. Johnson.
(58) *Porter* .....Lieutenant-Commander Ward K. Wortman.
(54) *McDougal* .....Lieutenant-Commander Arthur P. Fairfield.
(65) *Davis* .....Lieutenant-Commander Rufus F. Zogbaum.
(62) *Wainwright* .....Lieutenant-Commander Fred H. Poteet.

We, of course, were looked upon with envy by all the other destroyer skippers. Each one of them was dreadfully disappointed at not being among the chosen few. This especially as there was a feeling that maybe these six would be the only ones lucky enough to get abroad. But particularly keen was the disappointment felt by Lieutenant-Commander Wygant and Lieutenant-Commander Bagley. These two destroyer Captains

saw their ships, the *Tucker* and *Jacob Jones,* which belonged to the Eighth Division, displaced by the *McDougal* and *Davis.* It was purely an exigency of war, but it hurt.

THE CHANGE IN PLANS

It is necessary here to digress from the chronological order of happenings in order to relate how the decision was reached to send the destroyers overseas; and how the selection was made. None of the facts were known to me at the time.

From London, Rear Admiral Sims was making urgent appeals to send across immediately all the available destroyers and small craft. These appeals were not heeded. This was undoubtedly because the Navy Department had made no plans for employing our ships offensively, the attitude in Washington being an entirely defensive one.

On or about April 10, Rear Admiral Browning of the British Navy and Rear Admiral Grasset of the French Navy arrived at Hampton Roads on their respective flagships. Here they were met by our Chief of Naval Operations, Admiral Benson, and Admiral Mayo. A conference was held in the Hotel Chamberlin. During the conference there was free and open discussion of the situation. No decisions were reached. The conference adjourned, proceeded to Washington, and on the following day, reconvened in the General Board Room at the Navy Department. Besides the four flag officers who had met the previous day at the Chamberlin, there were at this meeting: the Secretary of the Navy, the Assistant Secretary of the Navy, several members of the General Board, Captain H. B. Wilson, U. S. N., Captain O. P. Jackson, U. S. N., and some members of the staffs of Rear Admiral Browning and Rear Admiral Grasset. The Secretary of the Navy presided. The discussions of the previous day were repeated. Both the British and French Admirals stated the Allies' needs and how in their opinion the United States could best help.

The question of the defense of our own battleships by an adequate number of destroyers seems to have been one of the chief issues. Finally Admiral Browning stated that while he recognized it was necessary that an adequate number of destroyers should be kept with the battleships, still he hoped that the United States would see its way clear at least to show its flag in the anti-

submarine work off the Channel. He pointed out that even *one* destroyer there would have a great moral effect.

Secretary Daniels then turned to Admiral Mayo and said:

"Can we send them one destroyer, Admiral?"

To this the Admiral replied:

"We can send a division and should not send less than that."

The decision to send a division was immediately made.

It has been represented that the British Admiral asked for *only one destroyer.* This of course was not so. His final appeal for at *at least one* in order to have the moral effect of our flag was made only after it became clear that the Navy Department's attitude was adverse to sending any of our vessels from the home coast.

A message was immediately sent to Rear Admiral Albert Gleaves, who was in command of the Destroyer Force, to select six destroyers for this duty. The selection was based entirely on the material readiness and steaming radius of the vessels. The Eighth Division was composed of the newest destroyers, with the exception of a few which had been lately commissioned. It was natural that this division would be in the best material condition. It would have been selected *intact* if it were not for the fact that the *Tucker* and *Jacob Jones,* through no fault of their personnel, did not have the steaming radius of the others. This reason, and no other, was why they were replaced by the *McDougal* and *Davis.*

That I should have been the commander of this division was purely accidental and circumstantial. Captain Hanrahan, who was my senior, commanded the Seventh Division. It so happened, luckily for me, that his ship, the *Cushing,* was undergoing extensive repairs at a Navy Yard. Otherwise, there is no doubt but that to him would have fallen the honor of commanding the first destroyers sent overseas.

Rear Admiral Gleaves recommended that the destroyers fuel and provision at Hampton Roads, and sail for the other side direct from there. This recommendation was approved by Admiral Mayo, but the Department directed that the vessels first proceed to their home yards.

FITTING OUT

The decision to send the destroyers to the other side was made so unexpectedly and the movement started so promptly, it is possibly natural that there should have been considerable confusion connected therewith. This confusion was augmented by the attempts at secrecy which prevented the Department from taking the commander of the small force into its confidence. Consequently there was much working in the dark. At any rate, insofar as I, the commander of the little force, was concerned, the "fog of war" was thick. It was difficult to comprehend just what the Department's wishes and intentions were.

A brief review of our movements and the conditions met with will perhaps show what is meant:

(1) An order received at 9:00 p. m., April 13, directs six destroyers to proceed *at daylight* to New York to fit out for distant service. This, of course, implied haste.

(2) In accordance therewith the destroyers proceeded at 28 knots, arriving at the New York Navy Yard at 6:00 p. m., the same day (Saturday). The yard is closed for work until Monday morning. We find no one even casually interested in us. Apparently there is no haste after all.

(3) The following day (Sunday), the Commandant informs me he received word from Washington that the *McDougal* and *Davis* were due at New York. No mention of the others. However, arrangements are made to begin docking all ships the next morning, four destroyers to be placed in the large dock together.

(4) The Navy Department gets report of arrival of all destroyers at New York. Devil to pay. It was the intention that those whose yards were Boston should have gone to Boston. To Boston they must go, and for Boston we departed the following morning, April 15.

(5) On arrival at Boston we find the Commandant and his assistant ready to help in every way possible. But we are still in the dark as to how long the Department intends it should take to get us ready. There certainly were reasons for sending us to the Navy Yards; otherwise we could have been well on our way across. A conference of commanding officers is held in which it is decided to ask for *every thing* we might possibly need. The list of repairs and alterations is submitted to the navy yard

authorities, and an estimate of ten days given by them to complete the work. This was on Tuesday, April 16.

(6) A telephone message from the Office of the Chief of Operations informs me that the destroyers must be fitted out for any and every service; they must have everything done that they require. *But they must be ready to sail at any time immediately on the receipt of orders.* I felt exactly like the little girl who had permission to go swimming and was told by her mother to, "Hang your clothes on a hickory limb, but don't go near the water."

It seemed to me at the time, and I still feel, that a more reasonable way for the Department to have handled this situation would have been to order the division commander to Washington and to privately explain matters to him. Instead, however, in the endeavor to maintain secrecy, extreme methods were employed, which failed in results. In fact the only way that real secrecy could have been maintained would have been for the destroyers to have quietly sailed from Hampton Roads. By first going to other ports all the personnel connected with the ships knew that something unusual was at hand, that the only thing it could be was that we were going abroad. Undoubtedly everybody at the New York and Boston navy yards knew it or guessed it, as did most of the officers' and men's families. There was considerable telephone communication between Washington and New York and Boston, with stenographers listening-in. Secrecy under these conditions was impossible. The public at large may not have known what was going on, but the secret agents, from whom it was important to keep the knowledge, undoubtedly found out a great deal.

This week at Boston was by far the hardest, most uncomfortable, and most difficult week that fell to my lot during the war. All, or most of which, would have been avoided had the Department taken me, the commander of the force, into its confidence.

Destroyers had never before been sent across the Atlantic except in company with larger ships. There was no doubt as to our ability to cross; but not knowing how our logistic requirements would be attended to, or whether we were going to England, France, the North Sea, or the Mediterranean, or even some place farther on, made it necessary to take on board all the provi-

sions that could be carried, and as much as possible of the spare parts, fittings, and equipment that were usually carried by the destroyer tender.

One could not but marvel at the amount of stuff that was brought down to the dock to be taken on these destroyers. Yet it all disappeared down the various hatches or was stowed on deck. When we finally shoved off each destroyer was displacing approximately 1,400 tons instead of the normal 1,100 for which designed.

The Department had been informed that the Division would sail on April 25. It was the intention to put to sea on that day, orders or no orders as to destination. This was evidently what the Department expected as Lieutenant R. C. Grady, who reported for passage, informed me that he had been instructed by the Chief of Operations to tell me confidentially that the destroyers should sail when ready, and the destination would be sent by radio. On April 22, the Commandant of the Navy Yard received this message headed, "Strictly Secret and Confidential":

> Direct Officer No. 324 (J. K. Taussig) special service division of destroyers be ready sail immediately urgent. Report as soon as ready. Destination English Channel.

This narrowed the probable destination to a decided, limited area. Considering the matter since, it has come to me that perhaps the Department did not want the destroyers to sail until the exact destination was specified by Admiral Sims; but if, by the date set by me for departure, no word as to the base had been received, the destroyers should sail anyway.

On April 23, the Department was informed that the division would sail the next day instead of the twenty-fifth as previously reported. It seems that it was also on the twenty-third that the Department received from Admiral Sims a cablegram designating the base to which we were to go. In order that the written orders could reach me, quick action was necessary. On the morning of April 24, two officers appeared at the Boston navy yard. They suddenly had been dispatched from Washington by Federal Express. These officers, Lieutenant-Commander W. W. Galbraith and Lieutenant M. L. Hersey, brought the secret sailing orders, and one copy of a British code book. The envelope containing

the sailing orders was marked "confidential." On opening it I found a second envelope marked "secret and confidential," containing an order which read as follows:

Op-10. NAVY DEPARTMENT,
Office of Naval Operations
Washington
(no date).

To: Commander, Eighth Division, Destroyer Force,
Atlantic Fleet, U.S.S. *Wadsworth*, Flagship.

SUBJECT: Orders.

1. Upon the receipt of the envelope containing sealed orders forwarded herewith, and when your force is in all respects ready for sea, proceed to a position fifty (50) miles east (true) from Cape Cod, Mass., break the seal and carry out the orders enclosed therein.

/s/ V. O. CHASE,[1] Acting.

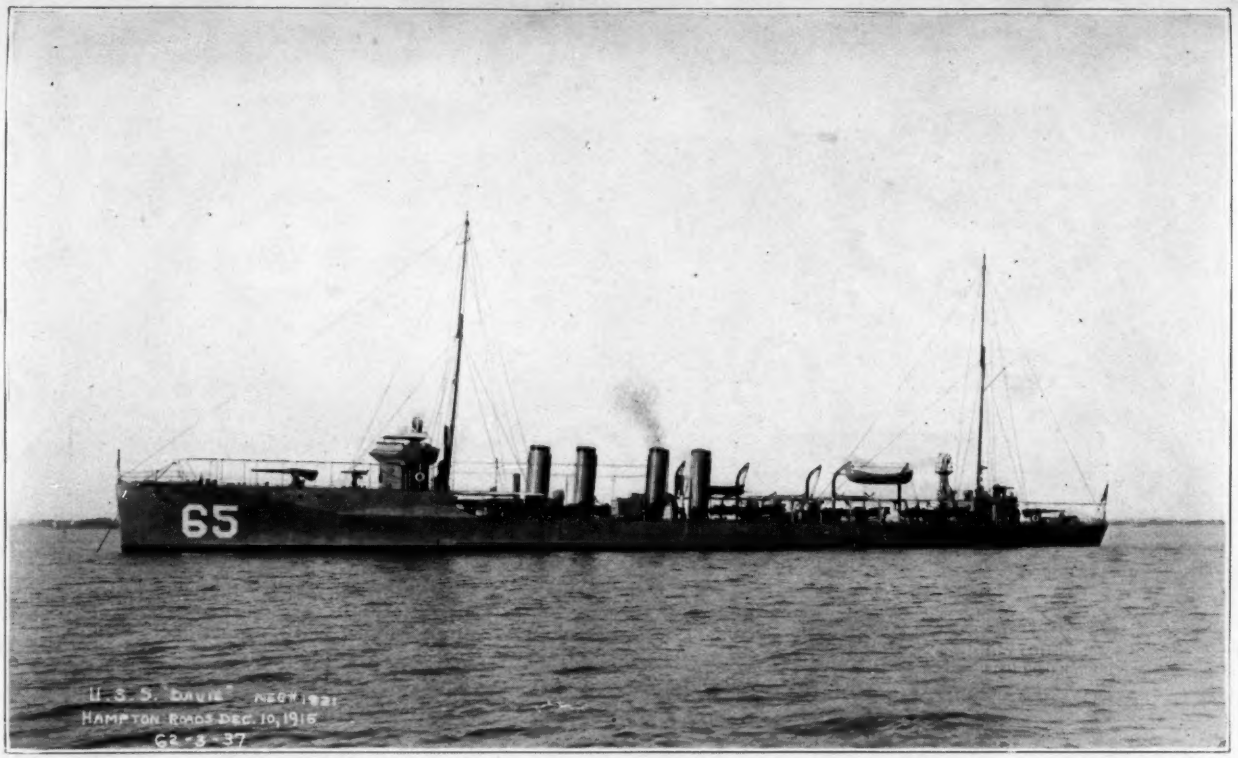
That same morning the *Davis* and *McDougal* arrived from New York, thus completing the division. At noon a pay officer arrived for duty as the division supply officer. He did not have time to accomplish much in the way of getting his outfit.

We filled to capacity with fuel oil up to the last minute, and, beginning at 4:30 p. m., April 24, the destroyers one at a time cast off and stood down the harbor. Our departure was as unostentatious as if we were going out for drill. There were only a few people on the docks, among them some of our women folks who bravely stood by to the last minute. It was not until weeks later that the press announced American destroyers were operating against the German submarines in the War Zone. This gave the people of the country their first real thrill, and the satisfying feeling that, after all, the United States was doing something besides talk.

THE CROSSING

On clearing Boston harbor the division formed in column, standard speed 15 knots. This would take us to the designated point fifty miles east of Cape Cod shortly after midnight. That seemed a long time to have to wait before we could ascertain our destination. My patience gave out at midnight, the secret envelope was opened, and this is what I read:

[1]Captain V. O. Chase, U. S. Navy, was the Assistant Chief of Operations.



U. S. S. "DAVIS"

The *Davis* was the newest of the first six destroyers to cross the Atlantic to Queenstown. This picture shows her as she was on sailing from Boston on April 24, 1917. She was commanded by Lieutenant Commander R. F. Zogbaum.

Op-10. NAVY DEPARTMENT
Office of Naval Operations
Washington
(no date).

Secret and Confidential:

To: Commander, Eighth Division, Destroyer Force,
Atlantic Fleet, U.S.S. *Wadsworth*, Flagship.

SUBJECT: Protection of commerce near the coasts of
Great Britain and France.

1. The British Admiralty have requested the co-operation of a division of American destroyers in the protection of commerce near the coasts of Great Britain and France.

2. Your mission is to assist naval operations of Entente Powers in every way possible.

3. Proceed to Queenstown, Ireland. Report to Senior British Naval Officer present and thereafter co-operate fully with the British Navy. Should it be decided that your force act in co-operation with French Naval forces, your mission and method of co-operation under French Admiralty authority remain unchanged.

Route to Queenstown—

Boston to Latitude 50 N–Long. 20 W, to arrive at daybreak,
thence to Latitude 50 N–Long. 12 W,
thence to Queenstown.

When within radio communication of the British Naval Forces off Ireland, call "G C K" and inform the Vice Admiral at Queenstown by British General Code of your position, course and speed. You will be met outside of Queenstown.

4. Base facilities will be furnished by the British Admiralty.

5. Communicate your orders and operations to Rear Admiral Sims at London and be guided by such instructions as he may give you. Make no reports of arrival to Navy Department direct.

/s/ JOSEPHUS DANIELS.

Copy to: C-in-C, Atlantic Fleet.
Comdr. Destr. Force.
C.O. each vessel of division.

That was all. No letter of instructions and no information concerning submarines or how they were operating. We were certainly on our own resources. But I felt pride in the fact that although the Department did not take me into its confidence, it did have enough confidence to leave all details concerning what was to follow to my own initiative.

Prior to sailing, the following order was issued to the division. It was based on such limited knowledge of submarine warfare as had come to my attention:

5-11 SPECIAL SERVICE DIVISION, DESTROYER FORCE,
U.S.S. *Wadsworth*, Flagship
April 24, 1917.

From: Commander Special Service Division.
To: Special Service Division.

SUBJECT: Procedure in case of sighting enemy submarines and in case of damage to vessel of this force by mine or destroyer.

1. If submarine is sighted the vessel sighting it will make six toots on the whistle (in groups of two), open fire and head for the submarine. The next destroyer astern will head in the direction of the submarine on parallel course to the other and assist in the attack. Other vessels will continue on course keeping a lookout for other submarines. Use radio as per C-in-C printed instructions.

2. In case a destroyer of this force is torpedoed or strikes a mine, other vessels will not stop, but will continue on course and make circle of wide radius around damaged vessel until other procedure becomes desirable. Vessels passing close to a disabled vessel will throw life preservers if it appears desirable.

/s/ J. K. TAUSSIG.

This order would have been in different form had I been a War College graduate; and some of the instructions would have been different had I written them a month later. But it gave a basis for mutual protection, and it fulfilled the requirements of the then immediate mission which was not to hunt submarines, but to get across in a condition that permitted of immediate operations.

It was found that while the *McDougal's* cruising engines could maintain 15 knots as a maximum, it was forcing her too much at the excessive draft, and it would have been too uneconomical for her to make the long passage using the main turbines. Consequently, the speed was reduced to 14 knots.

On the afternoon of April 25, the *Conyngham* developed a knock in one of her circulating pumps. It was decided to stop and have it remedied, which was done in two or three hours.

On April 26, the wind started rising from ESE. It increased to half a gale in force and continued so for six days, the storm evidently moving eastward at the same rate as the speed of the ships. Fortunately, the sea was on our beam. If it had been farther ahead we would have had to slow down very materially. As it was, the speed was reduced to 12 knots. This speed was maintained for six days, and very uncomfortable days they were.

All the destroyers rolled excessively in the beam sea. The mess tables could not be spread, and during this period all hands ate off their laps, that is those who ate at all did.

My chief concern was the condensers. It was certain that if we were spared such troubles the passage would be easily accomplished. But if any one of the destroyers developed sufficient leak to spoil her fresh water supply, it would mean considerable delay and the possible necessity of transferring water from one ship to another. The *Wainwright,* during the past winter, had trouble with the condensers, and it was with particular concern that I watched this vessel. On April 30, my fears were realized. A signal from the *Wainwright* announced "condenser leaking badly." This necessitated her stopping in order to locate and remedy the leak.

I could picture the feelings on the *Wainwright,* a feeling of remorse at being the cause of a delay to the division; and at the same time I could picture the men at work down in the hot engine room taking off the condenser heads, working feverishly and rapidly but skilfully and efficiently. There never were more efficient crews than those which sailed in this little flotilla. The personnel, though lacking in quantity, made up in quality. For the past year these destroyers had been hard at work; maneuvers day and night, target practice, and steaming trials. They had all been in competition with one another, and at the time of departure had reached the peak of personnel efficiency. However, it could not be expected that the material condition of the vessels was at the best. This was because we had just completed an unusually strenuous winter, under way continually, with very little time for overhaul. Our departure for overseas was at a time when we should have gone to the Navy Yard for the semi-annual overhaul.

On occasions it has appeared in print, and I have frequently heard it expressed, that the crews of the destroyers were composed of picked officers and men. If this were so, the picking had been done long before we entered the war. The truth of the matter is that the vessels sailed with their regular personnel. As for my own ship, the *Wadsworth,* we had on board the usual peace time complement of five line officers (including the Captain), and ninety-six enlisted men, five of whom were fresh from

the training station. It was not until we had been operating in the war zone for some time that the complements were increased to eight officers and 115 men.

But to return to the *Wainwright*. Knowing how eagerly and rapidly they were working it seemed possible they might not take as much time as desirable to complete the job satisfactorily. So to show that I was not impatient (although I was), a signal was sent to Captain Poteet to "take your time and make a good job of it." In an incredibly short period they had removed the condenser heads, located and repaired the leaks, replaced the heads, and signaled their readiness to proceed.

There were but few incidents that were not usual in such a passage. Of course all the destroyers were darkened at night, a procedure which was routine until after the signing of the Armistice.

One day we suddenly sighted the big White Star Liner *Adriatic*. The visibility was poor and we had undoubtedly seen her before she saw us, as a few minutes later she turned tail and started to run, which she continued to do until our colors were hoisted. At first it seemed rather strange for her to be doubtful as to our identity even if she had no knowledge of American destroyers being in the vicinity. But after a little experience in the War Zone I realized how it was that the destroyers were taken for submarines when first sighted. When visibility was not good, destroyers and other small craft were frequently taken for submarines, even by those who had considerable experience.

On May 2, the wind and sea having gone down, we proceeded with more comfort. As the secret orders directed that we cross the twentieth Meridian at 3:00 A. M., it now became necessary to slow down to even less than 12 knots in order not to arrive there before this time.

I supposed the definite time for crossing this meridian was given so as to assist an escort vessel in making a rendezvous. Sure enough, during the forenoon our radio picked up the first faint calls from H. M. S. *Parthian*, which, we learned later, was a destroyer. She was new, and, therefore, not on our list of vessels.

The *Parthian* requested our position, course, and speed. This was given, and he was informed that we had slowed down in order to cross the designated meridian at 3:00 A. M. in accordance with orders from Washington. On suggestion from him we increased speed to 15 knots. The visibility was poor and the *Parthian* failed to make contact. He radioed that he would steam to the eastward at our speed and on a parallel course so as to join us after daylight in the morning. However, the visibility was again poor and the *Parthian* was not sighted, nor was she seen until after our arrival at Queenstown.

This was the morning of May 3. The sea was now smooth and we were proceeding comfortably when the *Wainwright* again signaled her condenser was leaking badly. It was necessary to stop. During the wait the *Wadsworth* stood by the *Wainwright* while the other four destroyers stood out for five miles on radial lines in the hope of sighting the *Parthian*. But nothing was seen so we continued on our way as soon as the *Wainwright* reported ready.

At about one o'clock the shout of "Sail ho!" was heard. There from out of the haze, standing towards us with a bone in her teeth was a British destroyer. She came along at high speed flying the international signal, "Welcome to the American Colors," to which the *Wadsworth* replied, "Thank you, we are glad of your company," which very inadequately expressed how really glad we were. This destroyer was the *Mary Rose*.

This little episode has been the subject of a picture by a British artist. He calls it "The Meeting of the Fleets." In truth it had a signficance in that it was really the first meeting in war between the outposts of the British and American Navies with the intention of friendly co-operation, instead of hostile action.

The little *Mary Rose* wheeled around and took station on the bow of our formation. The Captain signaled that he would remain with us until arrival at Queenstown. Having heard that vessels in the neighborhood of submarine should zig zag, but having no definite instructions in regard to it, a signal was sent to the *Mary Rose* asking if it was desirable for the destroyers to zig zag. The signalled reply was: "It is safer to zig zag but it is a terrible nuisance." I concluded that any submarine that

sighted seven destroyers proceeding together at fairly high speed would keep clear. So we did not zig zag.

Shortly after the day of our arrival at Queenstown the *Mary Rose* was transferred to a North Sea station. A few months later we received the sad news of the loss of the *Mary Rose*, the gallant little ship going down in battle and taking all hands with her. While escorting a Norwegian convoy, two German raiders made an attack. The *Mary Rose* went for the enemy cruisers in an attempt to protect the convoy. The odds were too many against her and she went down fighting to the last.

There now being no doubt as to all destroyers having sufficient fuel, the speed was increased to 20 knots and we continued thus throughout the night and until the next morning. Then the *Mary Rose* signaled that a message received from the British Vice Admiral at Queenstown directed the destroyers to arrive off Daunt Lightship not prior to 1:30 P. M. in order that arrangements made for taking moving pictures could be carried out. This necessitated slowing down a little.

At the appointed time we were off Daunt Rock light vessel which from a position five miles off shore marks the approach to Queenstown harbor. Here we formed column and with the *Mary Rose* showing the way, steamed past the tug having the moving picture operators on board, past the lightship, and through the swept channel which had just been cleared by the mine sweepers. As we arrived, the ever busy sweepers were still picking up mines which had been laid by a German submarine the night before. Mines had not been laid off Queenstown for several months previously, and it was the first time that they had ever been laid within six feet of the surface. All of which was good evidence that the Germans knew about the sailing of the destroyers, and, if they did not know the destination, they were very good guessers.

At Queenstown

Just before passing between the headlands at the harbor entrance the division was stopped, and a British Naval Officer boarded each vessel to pilot us to our berths. On the *Wadsworth* came Lieutenant Commander Robinson, R.N., and with him were Commander E. R. G. R. Evans, C. B., R.N., Lieutenant Commander (SC) E. C. Tobey and Lieutenant Commander J. V.

QUEENSTOWN FROM A DESTROYER AT A BUOY

The Royal Cork Yacht Club in the foreground. Admiralty House on the top of the hill shows to the right of the Cathedral.

Babcock of our Navy, and Mr. Sherman, the American Vice Consul. Captain Evans had been detailed as liaison officer on request of Admiral Sims; Lieutenant Commander Tobey was attached to our embassy at London; Lieutenant Commander Babcock belonged to Admiral Sims' staff; and Mr. Sherman came as the representative of the American Consul to welcome us to Queenstown.

We were soon under way again and with the *Mary Rose* still leading stood up the beautiful harbor. This fascinating place later became very familiar to us, as it did also to the thousands of American officers and men who followed and who so frequently sailed in and stood out from that time until after the Armistice. But today was a special occasion. The shore and hills in places were crowded with people gathered to welcome us. There evidently was no secrecy as to our coming in so far as the inhabitants of Queenstown and Cork were concerned. And they made very much more over our arrival than we had thought of.

We passed close to the lighthouse on Roche Point, and on up the harbor between Dogsnose and Ram Point. Then a turn to the right and through the gate in the submarine net, past Spike Island and through the shipping in the outer anchorage. A sharp turn to the left around Bar Rock buoy found us standing close along the Queenstown shore, so close it seemed as if one could almost touch the houses. There was the handsome cathedral of Saint Clomans; and high on the hill overlooking the entire harbor stood Admiralty House with the British Vice Admiral's flag whipping in the breeze. At this time we did not even know the name of the British Vice Admiral; but I know now, without having been told, that Vice Admiral Sir Lewis Bayly was on the roof of Admiralty House, binoculars in hand, watching with critical eye every move of those six little destroyers as they steamed up the harbor. Then there came the long double line of mooring buoys, at one of which was the Light Cruiser *Adventure*, while some of the others were occupied by the patrol vessels, sweepers, destroyers, sloops, trawlers, M. P. boats, etc., which were in port for a short respite from their arduous duties. Between the buoys and the Royal Cork Yacht Club, we passed on up to the Haulbowline dockyard where the *Wadsworth* moored to the oil jetty; her stem almost touching the stern of the little

old *Colleen,* the station ship. The *Conyngham* tied up alongside the *Wadsworth,* while the other four destroyers moored to buoys. The ten day trip was over; fuel oil was already pouring into the tanks of the *Wadsworth* and *Conyngham.*

Had the exigencies demanded, all destroyers could have gone to sea that evening, as soon as fueling was completed. The date was May 4, 1917.

Captain Evans and Lieutenant Commander Babcock upon stepping on board, had each handed me two envelopes. These contained a note from Vice Admiral Sir Lewis Bayly, Commander-in-Chief at Queenstown; a letter from Admiral Sir John Jellicoe, the First Sea Lord of the British Admiralty; an operating order from Rear Admiral Sims who was in London; and a long personal letter from Admiral Sims. In view of the historical interest of these letters they will be reproduced here in full; all excepting the personal letter from Admiral Sims from which only extracts will be given. Admiral Bayly's letter follows:

Admiralty House,
Queenstown,
3. 4. 17

Dear Commander Taussig:

I hope that you and the other five officers in command of the U. S. Destroyers in your flotilla will come and dine here tonight, Friday, at 7:45, and that you and three others will remain to sleep here so as to get a good rest after your long journey. Allow me to welcome you and to thank you for coming.

Yours sincerely,
LEWIS BAYLY.

Dine in undress: no speeches.

This note with its kindly invitation, which of course was accepted, was the forerunner of many other invitations from Admiralty House which came throughout the stay of the Americans at Queenstown. However, I knew of no others that were written. Thereafter all invitations from Admiralty House came by word of mouth or by signal.

I was particularly proud to receive Admiral Jellicoe's letter. I knew him personally, having had the pleasure and pain (both of us were wounded) of serving with him in China in 1900. I could appreciate that now, as First Sea Lord, he was an ex-

tremely busy man to take time for writing to me. The letter is in his own handwriting:

Admiralty, Whitehall
1. 5. 17

My dear Taussig:

I still retain very pleasant and vivid recollections of our association in China, and I am indeed delighted that you should have been selected for the command of the first force which is coming to help us to fight for freedom, humanity, and civilization: we shall all have our work cut out to subdue piracy. My experience in China makes me feel perfectly convinced that the two nations will work in the closest co-operation and I won't flatter you by saying too much about the value of your help. I must say this however. There is no navy in the world that can possibly give us more valuable assistance, and there is no personnel in any navy that will fight better than yours. My China experience tells me this.

If only my dear friend McCalla could have seen this day how glad I should have been.[3]

I must offer you, and all your officers and men, the warmest welcome possible in the name of the British Nation, and the British Admiralty, and add to it every possible good wish personally for yourself.

May every good fortune attend you and speedy victory be with us.

Yours very sincerely,
J. N. JELLICOE.

This certainly was a cordial greeting and one to be proud of as coming from the highest ranking British Officer.

It brought home to me then and there, that the coming of the American Destroyers meant more to the Allies than anybody in the United States could appreciate without having been on or near the scene of conflict.

The operation order issued by Admiral Sims as Commander of the United States Naval Forces was, as can be seen, brief and very general as to detail:

U. S. DESTROYER FORCE,
European Waters,
April 29, 1917.

Operation Order
No. 1.

1. Enemy submarines operating against Allied commerce in increasing numbers.

[3]The reference here is to Rear Admiral Bowman H. McCalla who as captain of the U. S. S. *Newark* commanded the American Naval contingent of the Relief Expedition during the Boxer uprising in China, in 1900.

2. This force co-operate with, and operate under, direct command Vice Admiral British Forces based on Queenstown.
3. Keep U. S. Destroyer Force Commander informed periodically of military service performed.
   Eliminate all official usual routine correspondence and reports which interfere in any way with efficient military service.
   Give particular heed to physical condition of personnel.
4. In absence of U. S. supply vessels obtain necessary supplies and repairs by direct request on British Headquarters, Queenstown, details and accounting to be arranged upon arrival of supply officer.
5. Forward official mail via British official routes. Use U. S. Service Radio Code for code messages to Force Commander.

WM. S. SIMS,
Rear Admiral, U. S. N.
Commanding U. S. Destroyer Force,
European Waters.

It is not at this time considered expedient to reproduce in full Admiral Sims' personal letter to me. It was one of advice, information, and instructions combined: just such a letter as one would expect Admiral Sims to write to one of his old flotilla captains. And it was one of great value to me as it contained the first authentic news as to existing conditions, with information as to what we were to expect, together with such good wholesome advice that for me cleared the hazy atmosphere as to the proper course of procedure. He wrote in part:

U. S. Embassy,
London, April 29, 1917.

Confidential:

My dear Taussig:

Needless to say your command will receive a most hearty welcome by this country both for sentimental and military reasons, for the submarines are becoming more and more successful with longer daylight and better weather, in spite of all the destroyers and patrol boats the British are able to send against them. In the week ending April 22, they destroyed 237,000 tons of shipping. Manifestly if this is not checked the Allies cannot win.

As soon as I was informed that the Division was coming over, I asked the Admiralty to detail an experienced destroyer commander to meet you at Queenstown and give you and your gang all the points, tricks and stunts, that the British have learned during nearly three years of actual

warfare. You will be supplied with "depth charges" and other appliances now employed, and be informed as to the best known methods of using them. Also as to the various methods that have been tried and found less efficient.

The Officer selected is Commander Evans, who was second in command of the Scott Antarctic Expedition, and was in command of the Torpedo Leader *Broke*, at present repairing the damage she received in the recent (April 20) destroyer fight off Dover. This was a very brilliant night action of two torpedo leaders (1,800 tons) against six German destroyers. Evans' boat torpedoed one and rammed and passed clear over the stern of another. Get the gang all together and make him tell you all about it, for the account contains a great deal of practical information as to the best methods of handling guns and torpedoes, in case you encounter enemy destroyers—which, however, you are not likely to do in the immediate future. He can also give you some very useful points on keeping your men contented while doing work which is necessarily largely monotonous.

I will not attempt to give you the details as he can better do that, but I cannot too strongly impress upon you the essential basis of such night attacks, which is that barring the handling of his boat, the Captain can do little in diverting the details. It is bound to be an affair of minutes, or even seconds, that will depend for its success largely upon the completeness with which the plan is worked out and understood by the personnel. The boat that is organized on the principle that all details are to be directed by the Captain will not succeed. *See that your Captains understand this important military requirement.*

While the above applies more particularly to actions against enemy destroyers, it applies also to actions against submarines. Evans will explain the use of the "depth charges," the most effective weapon against the subs, and from his explanation and the nature and use of the weapon you will recognize the absolute necessity of practically instant action in carrying out a pre-arranged plan of attack.

I have just been placed in command of all U. S. destroyers operating on this side including twelve more destroyers with tenders and auxiliaries to be sent later, but as the active command will of course be exercised by the senior officer on the spot, under orders of the Vice Admiral of the Port, I want to warn you as to certain difficulties that may arise.

Require all officers not only to refrain from all criticism of British methods, manners, and customs, and ask them to refrain from mentioning them in their letters. Also give attention to bringing about friendly relations between our enlisted men and the British. This is very important.

Criticism can do no good; it may do much harm. Let us set a record among the Allies for co-operation and show what can be done in a common cause.

I hope you will be able to shake your gang down and get on the job with as little delay as possible, and thereby make a good first impression,

NOTE:

The report of readiness made by Captain Taussig to Admiral Bayly has become famous. An officer describes the interview as follows:

"I was detailed by Admiral Sims to accompany Captain Geo. E. R. Evans to Queenstown to be present at the reception of our officials by the then Commanding Chief of the British Forces, with headquarters at Queenstown.

"At a reasonable time after the destroyers arrived, the six commanding officers, with Evans, Babcock and myself, proceeded to the Admiral's house. Evans introduced Taussig to Bayly as the Commander of the Division, and when the latter failed to make any reference pleasant or otherwise to the coming of our vessels, I was astounded at his omission to make a gallery play of some sort; and for this reason perhaps, I remember distinctly what he did say, and I have confidence in the belief that my recollection is accurate.

"After acknowledging the introduction, Bayly's first words were these: 'Captain Taussig, at what time will your vessels be ready for sea?' Taussig replied, 'I shall be ready when fueled.' The Admiral then asked, 'Do you require any repairs?' (meaning dockyard work). Taussig answered, 'No sir.' The Admiral's third and last question was, 'Do you require any stores?' (Meaning dry provisions). Taussig answered, 'No sir! Each vessel now has on board sufficient stores to last for seventy days.' The Admiral concluded the interview with these instructions and the observation following, 'You will take four days rest. Good Morning.'

"For years I have had the liveliest admiration for Taussig, but at no time have I admired him as much as at the time of this interview when he met the Admiral point to point.

"After this occurrence I saw a great deal of the Admiral, and about a year and a half ago, I visited him for a week in Devon. I know from what he has said to me on these various occasions that he was as much impressed with Taussig's straight answers as Taussig was impressed by the business-like aspect of the interview."

Editor.

THE FIRST MEETING WITH VICE ADMIRAL SIR LEWIS BAYLY

Right to left: Admiral Bayly, Commander Taussig, Lieutenant Commander Wortman, Mr. Wesley Frost, Lieutenant Commander Fairfield.

which counts for a good deal. To that extent, and perhaps more, you have the reputation of the service in your hands, as far as the British go. Whatever you accomplish is liable to have pretty wide circulation in their service. Paymaster Tobey, who is thoroughly in touch with his end of the game over here, is going over with Evans and will assist you in arranging for supplies, repairs, etc.

I am sure your people will be intensely interested in this work. Of course you and they will understand that it will be no picnic. It will not only be hard but may prove very monotonous. Its success will be largely in keeping the subs below the surface or chasing them away from a certain area.

I may be able to assign you to more interesting work later, as a change if nothing else. In the meantime I am sure I need not warn you not to allow the monotony of the present duty to cause the least relaxation of extreme vigilance, upon which success in such work depends.

I am sending you an operation order specifying the manner in which the operations of your force are to be co-ordinated with those of the British.

I have no doubt that, no matter how arduous the duty may prove to be, you will not only remain cheerful, but will keep all hands the same.

Very sincerely yours,

WM. S. SIMS.

There was considerable more to-do made over our arrival than we had anticipated. It seems that the British placed a decided importance on our coming as an historical event worthy of record. It was for this reason that one of the War Office official photographers was sent from London to take moving pictures of our ships, their personnel, and their doings. And this photographer certainly was on the job. Every place we went that first day the moving picture machine was ahead of us.

The destroyers were all moored before three o'clock. Shortly afterwards the six captains, accompanied by Captain Evans and Lieutenant Commanders Tobey and Babcock were taken in Vice Admiral Bayly's barge to the landing at Queenstown. There we were met by the American Consul, Mr. Wesley Frost, Captain Carpendale, R. N., the flag captain, and several members of Admiral Bayly's staff—among them Commanders Roe and Churchill. I knew nothing of the program, but simply followed where led, rather surprised that so much fuss was being made over these six little destroyers, and always wondering what was coming next. There were automobiles at our disposal, and we invariably rode, even if for only a very short distance. Our first stopping place

was the American Consulate, conveniently situated over a saloon near the landing. On mounting the stairs and entering the office I was somewhat appalled at the gathering awaiting to greet us. The assemblage consisted of the Lord Mayor of Cork, Mr. Butterfield, and about twenty of the leading officials and citizens of Cork and Queenstown. After a round of hand-shaking, champagne was brought in and Mr. Butterfield made a speech of welcome. This certainly was war with a vengeance. I had not contemplated speech making among the "any and every duty that might be required." But of course I had to say something, and am just as well satisfied that I do not now remember what it was.

From the Consulate we were driven up the hill to the entrance gate of Admiralty House. Here we disembarked and walked through the lovely garden to the door where Admiral Bayly awaited us. The Admiral was standing with his back to the moving picture camera which, as usual, was grinding away as we approached. I would have given a good deal to know just what the Admiral's thoughts were. I was presented by Captain Evans, and then immediately introduced the other five captains. In a letter written nearly two years later, in which he thanked me for my share in the presentation, by American naval officers who served with him, of a silver model of one of our destroyers, he wrote ". . . . When you and I first met in May 1917, I think we both wondered how the show would work, but besides that there was such a determination on the part of you and those who came with, and those who followed you, that it should prove a success that there never really was any doubt or question in the matter. . . ."

This official call was of short duration. There was still the call to be made on General St. John who commanded the military forces in the immediate vicinity of Queenstown. The General and his *entourage* were most cordial and it was regretted that we had to cut short our visit. But is was growing late and there was just sufficient time to return to our ships and get ready for dinner at Admiralty House.

During my stay at Queenstown I had the pleasure of dining at Admiralty House many times. However, all the dinners excepting this first one were informal and more or less *en famille.*

The dinner this evening given in honor of the six American Destroyer captains was a formal affair, there being fourteen at table. The only woman present was the Admiral's charming niece, Miss Violet Voysey. Here we met all the higher ranking officers of Admiral Bayly's staff and the officers who were in command of the various departments operating at or from Queenstown as a base.

It felt very good, after being tossed about for ten days at sea, to turn in on the nice big bed in the Admiralty House. We of course received all the attentions for which English hospitality is noted, and the next morning greatly enjoyed the home-like breakfast with Sir Lewis and Miss Voysey. It was served in true English style, that is each one waiting on him or herself. We could not tarry long as there were duties to perform on board ship and there were still official calls which had to be made and returned. In the afternoon we went to Cork going by way of the picturesque River Lee in the Admiral's barge. Here we returned the Lord Mayor's visit and called on General Doran who commanded all the military forces in Southern Ireland. Needless to say we were graciously received at both places. That afternoon we had tea with the American Consul and Mrs. Frost.

It might seem from reading an account of these functions that all our time was taken up with calls and parties, and that the actuality of war was for the time forgotten. But this was not the case. We had plenty of reminders that the submarines were about and that the situation was serious. A converted yacht came in bringing survivors from a torpedoed vessel—an almost daily occurrence. While at dinner at Admiralty House we heard the explosion of one of the mines which the Germans had planted in the hope of bagging one of the destroyers. Before the party broke up, Captain Carpendale left to meet a patrol vessel which was bringing in the survivors of a British sloop, which had been torpedoed, with the loss of the Captain and about forty of the crew. We were told that the lost captain had been one of Admiral Bayly's favorites.

On board the six destroyers all hands were working like beavers preparing for the arduous duties which we knew were before us. The details of this preparation will be left for another chapter. Suffice it to say that we had been in the war zone

but a very few hours before we realized the seriousness of the situation and could appreciate why the authorities were so glad to get re-enforcements even on so small a scale as that represented by the six American destroyers, which to them symbolized "The Return of the Mayflower."

The kindly spirit in which we were received and the cordial manner in which everybody extended greetings, made us feel at home immediately. This undoubtedly had much to do with the perfect co-operation between the British and American Naval forces which began on the day of the arrival of "The First Six," and lasted, with unblemished record, until the last of the American forces quitted Queenstown two years later.

(To be continued)

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U. S. NAVAL INSTITUTE, ANNAPOLIS, MD.

THE PRACTICAL APPLICATION OF THE PRINCIPLES OF HIGH COMMAND

By Captain Harris Laning, U. S. Navy

During recent years military and naval officers the world over have been devoting more and more of their attention to the principles governing the exercise of command, and many are the books and papers that have been published on the subject. While not a few of the writings are invaluable to those who exercise command, nevertheless practically all of them treat the subject from a theoretical rather than from a practical point of view. However essential theory may be to the development of any art or science, it is not always necessary that he who practices the art be an expert in the *theories* upon which it is based, nor does it follow that one who is a good theorist will for that reason be good in practice. Hence many of the writings on command are not of great help to the practical man in doing the actual work, for having filled his mind with theories, and probably sound theories, he is often at a loss as to how to apply them to his everyday work. It is the belief of the author of this paper that the "practice" of command, like the "practice" of navigation, engineering, or any other activity, can be so described that one can perform it with fair success even though not a great expert in the *theory* of it, and it is the intent of this paper to outline what appears to be a practical method for insuring successful *high command* in naval forces.

So far as the naval service is concerned *command* is of two distinct types. One type, which we may call *low* command, is more generally concerned with controlling men as individuals and in leading them while carrying out the wishes of a superior; the other, which we may call *high* command, concerns itself with controlling the unified efforts of groups of men through directing

the commanders of the groups. Between the two types there is a great, though not always recognized difference. In the former the commander is always a follower who merely carries out the ideas of another, while in the latter the commander is always a leader who *creates the ideas* as well as directs the carrying out of them. It does not follow that a man who is excellent for low command will by virtue of that fact excel in high command, for it is one thing to lead on a way devised and directed by some one else and quite another to devise, direct, and lead the way for all others.

In the Navy the line of demarkation between high command and low command usually lies somewhere *above* the grade of captain. Up to the time he leaves the captains' grade, an officer's work is generally confined to that of low command. Starting with the grade of ensign, each duty of low command naturally prepares one for the next higher duty in that command, and an officer profiting by experience can pass along the line through the grade of captain without finding it absolutely necessary to give much study and thought to the principles of low command. As a subordinate he has no great difficulty in carrying out the duties assigned him, probably having an excellent division, department, or ship. He may or may not have analyzed the principles of low command and applied them to his work, though if he has he is undoubtedly a more efficient officer. Up to the time he leaves the grade of captain, and possibly for some time after, the average intelligent, energetic and conscientious officer exercises command passing well, and it is frequently assumed that when he has done so he has thereby become fitted for the high command that comes with further promotion. Such assumption is utterly unsound and is dangerous in the extreme. While it is practically certain that an officer who fails in low command will hardly excel in high command, it does not follow that mere success in low command proves one's ability for high command. On the contrary there are many men who, under the leadership of efficient *high* command, can obtain excellent results while commanding a ship, a division of ships, or other subordinate unit, but who have not certain altogether different essentials required for high command. It is the purpose of this paper to discuss those essentials and to then point out how they may be developed and applied.

Before starting a discussion of the essentials, attributes, or principles peculiar to high command, it would be well if we could digress long enough to consider those of low command, for there can be no doubt that as far as they go the principles of low command apply also to high command. However, it is not the purpose of this paper to deal with such elementary principles. It is assumed that all officers are more or less well qualified for exercising low command and that all are continuously preparing for the higher task when it comes. Hence for the moment we are not so much concerned with what we *have been* or *now are* as we are concerned with what we *must be and do* if we are to succeed in high command. Most of us are approaching a point in command where we may cease to be the followers of leaders to become the leader of followers, which change is very great and which we must be ready for when it comes. What must one be, what must one do to succeed in this new form of command?

Before we can deduce an answer to our query it is necessary that we have a full understanding as to just what is meant by command. In the *Century Dictionary, command,* as held by persons, is defined as "the right to order, control, or dispose of" and carries with it "the right to be obeyed or to compel obedience." This definition covers the meaning of the word as it is generally understood, but analyzing the definition we cannot but be impressed with the fact that although it states much as to the *rights* possessed by one who commands, it says nothing at all as to the responsibility and duties of a person when he posseses those rights. That command carries with it responsibility and duties as well as rights is evident, but just as they are omitted from the definition they are not always given the consideration they should receive even by those who reach positions of high command. Thoroughly informed of the *rights* that go with command, not all understand or appreciate what such rights impose, yet it is what they impose that is the very essence of success in high command.

It is not difficult to *order, control,* and *dispose of* when one has the power to *compel* obedience, but to do those things in the way to get the best results is an altogether different matter. That they must be done in the one best way in military or naval forces is evident, for unless they are, not only will the forces themselves

pay the price but also the whole state to which they belong will pay it. From this it must be apparent that that which actually constitutes command, viz., "rights," is possibly the least important part of it while that to which no reference is made in the definition, i. e., the responsibility and duties of command, is the very thing on which all success in command rests.

It is much to be regretted that the definition quoted above is so generally accepted, both in the service and out of it, as the full meaning of the word *command*. The idea that a Naval Academy education, a commission, and an officer's uniform, if coupled with a long life in the service in positions of low command, are all that is required for high command is not entirely confined to civilians. All too many naval officers have that idea and seem to think that those things are practically sufficient in themselves to make a man function perfectly in the art of high command. As a matter of fact those things are the most primary and minor elements of high command. Having them, the officer is merely at the starting point. Whether or not he functions properly thereafter depends upon himself.

It has been said that truly great commanders, like Napoleon and Nelson, are born, not made, and there can be no doubt that some men have a natural bent for high command that others have not. However even the greatest in high command, born to it though they may have been, reached their pinnacle only because of their preparation for their tasks. And the same processes must be gone through with by every successful commander. Not one has or will become great through mere intuition and environment, and hence no matter on whom the mantle of high command may fall, it remains for him to fit himself for the work. Were it possible to make the mantle fall only on those who have the natural bent for it, filling positions of high command would be much simplified, for such men would instinctively prepare themselves. As yet, however, we have no means of ascertaining which officers have that bent, hence all who approach the zone of high command must prepare themselves for it even though not foreordained to succeed in it. Each one must so educate himself that he will know what to do and how to do it, and then, having that knowledge, must develop the qualities both in himself and his command, that will enable him to make his forces do the things he wants done, in the way he has decided to do them.

From the above it would appear that there are three fundamentals for success in high command:—*First,* knowledge of exactly what is to be accomplished; *Second,* ability to lay out the certain way to accomplish it with the forces at one's disposal; and *Third,* skill in directing and leading the forces commanded so they will do the thing to be accomplished in the way decided on to do it. If he who holds a position of high command develops these three fundamentals, ***knowledge, planning, execution,*** his success is certain. Therefore let us see what he must do to develop them.

Up to the time he starts preparing himself for high command, an officer is not compelled to familiarize himself with anything but the immediate tool with which he works, such as the gun, the turret, the engine, the shop, the plant, the ship, or, at most, a small group of ships working as a unit. He comes to know rather definitely, or at least should know if the work of his higher commander has been thorough, just what each tool he has been associated with must accomplish in any situation. Also he has been indoctrinated in the way the tools should be utilized to accomplish it. His work has therefore been rather simple and his responsibility comparatively small. But on taking up the work of high command all this changes. He no longer thinks in small units or operates one or more small units, but must operate many units of many kinds, in a wide range of activities, and solely to attain the end in view in a way determined by himself. While his knowledge of details and the previous training he has had are undoubtedly essential in the new position, by themselves they help him not at all in it. Unless he knows how to combine all the parts of his command into one great machine, and can make that machine do his bidding, he does not function as a high commander. True he may wear the uniform, occupy the position, and assert his "rights;" also he may put up the semblance of a machine; but when the test comes the machine will fail and in its failure bring disaster to itself and to the country that owns it.

Before one can develop a machine for making successful war he must know what such war is. Hence the *first* step toward high command is a study of war—what causes it, what will constitute a decision, and what principles of strategy and tactics should be followed to gain decisions. Such study of war can never end as long as an officer may be called on to exercise high command,

for only by keeping up to date in all things pertaining to war can the officer hope to keep himself ready to wage it successfully. However, when he has progressed to a certain point in his study of the conduct of war, the officer must learn to apply the principles in planning and carrying out successful operations pertaining to war. This is the *second* step in preparation for high command and in this phase the officer must get actual practice through war games. By such practice he learns to correctly estimate situations and reach sound decisions as to the courses of action he should take to win out in any situation, and if such practice is continued he finally becomes expert in drawing up plans that will bring victory in war.

The two steps of preparation just now so briefly outlined can be partly made by taking the courses provided by the War College, but owing to the limitations of the correspondence course, and to the shortness of the regular course, neither step will be complete unless supplemented by constant work along similar lines. Both before and after the War College courses the officer must study and practice war operations, constantly endeavoring to broaden his knowledge and make himself more expert in the conduct of war. But no matter how far he continues such work it is after all only a preliminary to high command. However great one's knowledge of war may be or how remarkable his ability to plan successful operations, he cannot *win* unless he makes his machine carry out his plans. So we now come to the final and most important fundamental of command, *execution,* the practical and successful application of theoretical preparation.

Just as there are many officers who believe that command begins and practically ends with the "rights" of the commander, so there are others who think that it ends when one knows the principles of warfare, and is more or less expert in *planning* war operations. While the latter idea is possibly not so utterly wrong as the former it is still so far wrong that he who believes it is but little better fitted for high command than he who believes the former. Knowledge of war and ability to plan war operations will not by themselves gain decisions in war and this must never be forgotten. Sound plans based on even full knowledge of war bring favorable decisions *only* when they are properly

executed. This being so it behooves us to go deeply into the matter of *execution.*

What must a high commander do to insure that the forces he commands will carry out his plans successfully? Operating on a sound plan, forces *organized* and *indoctrinated* for their task, well *disciplined* through proper *training* in *team work, loyal* and of *high morale* will always win the decision if it is humanly possible to do so in the existing situation. Therefore the answer to our question as to what the commander must do to make his forces succeed seems to lie in (1) Organization, (2) Indoctrination, (3) Discipline, (4) Training, (5) Team Work, (6) Morale, and (7) Loyalty. Let us discuss each of these until we clearly see not only its relation to the execution of plans but also how we may develop it in the forces we command.

Until he is actually given the position, the work an officer does in connection with high command is expended entirely on himself. But when he enters high command and starts to execute, the officer deals with others, many others, who know neither his ideas nor his methods, who are not organized or trained to meet the requirements of *his* plans, and who have little to bind them to him. Yet all of these he must take unto and make a part of himself and his machine. If he is to succeed he can no longer rest content with doing only what he is told to do or what routine requires him to do, but on the contrary must act, act vigorously, and along the right lines deduced by himself. Having no one above to drive him, he must initiate, push, and drive on his own volition until his machine is assembled and in every way ready to fight, for until it is assembled and ready the machine is useless for his purposes, and the high commander has failed in the duty his country implicitly trusts him to perform.

The first step in developing a war machine is to organize it properly to do the work it will be expected to do in war. Such organization is much less difficult to bring about than is generally supposed provided that *efficiency for the task* is made the criterion. Unfortunately, and all too often, those in high command sometimes let other things than fighting efficiency dictate the organization of their forces, and as a result they frequently wind up with commands that can do almost anything but the one thing they are wanted for, fighting. We have had this situation

even in our own Navy and will continue to have it whenever organization is based on anything but the fighting factor. Therefore on coming to a position of high command, the first thing an officer has to do is to make estimates of the situation, ascertain who the probable enemy or enemies are, determine the fighting his command may be called on to do in case of war with them, and then decide on how he will carry on the fight and on his *task organization* to fight that way. This *task organization* for war, derived from those estimates, is the organization a commander should use for his forces, not just during war but during peace as well.

Let us show by instances the practical application of the above method, starting with the Chief of Naval Operations. Upon being made Chief of Naval Operations it becomes the duty of the officer so assigned to take what navy Congress has provided, the Department, the various shore activities, and the forces afloat, and organize them to win any war that is likely to occur. His process for doing this is the same as is gone through by any other commander though in his case he is required by law to draw up the war plans. When he has done that, it then becomes his duty to arrange the whole Navy, including the Department, into such task groups as are called for by the plans he adopts. It takes no law to enable him to do it; it takes merely a strong man who knows what he wants to do and has the force to do it. He may have to upset the Department considerably to do it, but even with laws creating Bureaus as they now are, a very workable organization can be effected. In the same way, by following only his war plan, he can see how to assign ships to fleets and naval districts, and having done that how to organize the shore activities to meet the demands of the fleets and districts. Since Congress has not yet provided all the Navy we will have in war, the organization gotten up by the Chief of Naval Operations to carry out his war plan will in many places be but a shell, and everywhere it will be much smaller in peace than it will in war. Nevertheless such an organization has but to be filled out or expanded to make it completely effective in war and this is as it should be. Shell-like though it be it is the only organization a ready-to-fight navy can possibly have.

Other officers coming into positions of high command, either

in the fleets or in the Department, go through exactly the same process, though when the Chief of Naval Operations has perfected *his* organization it may be unnecessary for them to begin their estimate of the situation where he does. If the Chief of Operations has given them their force and mission their estimate begins with that. But it is carried on to the same end, be the task group commander the Commander-in-Chief of a fleet or a Chief of Bureau. Each decides how he will carry out his mission as set forth for him in the Chief of Naval Operations plan, and decides on the task organization his forces should have to do it. Then he puts his forces into that organization. And so it goes on down the chain of high command even into the realms of low command, until the navy as a whole and every part of it is *organized to fight*.

Even in a most highly developed navy an officer coming into a position of high command would be unlikely to find his command already organized as it must be if it is to carry on in *his* way, and so he must always reorganize it sufficiently to fit his way. It will not do for him to change his way or forsake it merely to meet some one's else organization, for the key of all organization lies in the task to be performed, and under no circumstance should the commander be forced to change his method of performing it. If properly prepared for high command, an officer can quickly organize or reorganize his forces to meet his plans for carrying out his mission by simply dividing them into the task groups he knows he will use in war. Having done that he has the best possible organization for his forces and the only one that will ever work or he will ever need.

The great obstacle to efficient organization in any Navy is the generally prevalent idea that there should be or can be a difference between its peace organization and its war organization. One might as well expect a team organized for baseball to win a football championship as to expect a Navy organized for peace conditions to win in war. If a team thinks and lives baseball it can't do much in football, and a Navy that thinks and lives for peace can never win wars. Yet to a certain extent that is the way in our Navy today, and any one who comes to a place of high command in it, if he hopes to succeed, must bend every energy to-

ward remedying that defect at least in the part of it he comes to command.

Just what causes a Navy or any part of it to continue in an organization based solely on types of ships and peace administration is hard to say, but it would appear to be because those in high command in such a Navy think in terms of peace rather than in terms of fighting. Possibly they know war and can plan war operations, but if so, they fail in the final test of high command for they do not prepare their forces to *execute*. We who are now preparing for high command must not follow that example for even though those who set it may not pay a penalty it does not follow that we also will fail to pay it. Therefore let us resolve that when high command comes to us we will immediately organize our forces for the work they should be ready to perform. It may not be easy to do; it may possibly make peace administration more difficult; and it may even meet with the opposition of some who do not or will not think in fighting terms, yet for all that we must do it for otherwise some of us are doomed to defeat, and our country to disaster.

Having organized his forces for war, a high commander must next indoctrinate them with his ideas and plans for waging it, for no matter how perfectly *organized* forces may be they cannot function as a fighting team unless each part knows exactly what is expected of it. Without indoctrination a huge Navy even when properly organized, is very like an "All American" football team, in which each position is filled by *naming* an exceptionally strong and able player, but which has never been assembled as a team and taught a way to play together. If the eleven men named as the "All American" football team this year were suddenly brought together and started in a game of football against a reasonably strong team, no matter how excellent and how strong the individual players are it would still have but little chance of winning. It would be exactly the same way with a war team. Unless the parts filling the various positions on the war team know exactly what is expected of them in every situation, and know exactly how to do it, they cannot win. Teaching them what to do and how to do it is known as "indoctrination."

Were it possible to carry on war by means of fixed rules, the indoctrination of a Navy, a fleet, or a force, by its commander

might not be absolutely necessary for with such rules one could turn to them and get an approximate idea of his part in any particular operation. However there are no such rules and, for naval forces, there never can be any. No two commanders will ever do exactly the same thing in any of the infinite variety of situations that arise in war and so whenever a high command is taken over by a new commander, even though the old commander has indoctrinated the command with *his* ways, it is still essential that the new commander at once start his indoctrination. And it is especially necessary that he do so in our Navy, for, possibly excepting the battleship force, no part of it is as yet fully organized for its war tasks or indoctrinated with *anyone's* ideas or plans for war. Not fully ready to wage war in accordance with anyone's ideas it is much less ready to wage it in accordance with the ideas of a new commander. Under any circumstance, but especially under circumstances such as still exist to a large extent in our Navy, a new commander must not delay his work of indoctrination. Like organization it is vital.

Indoctrinating the command is one of the longest and hardest parts of the work of a high commander, yet the indoctrination must be thorough. Just how to proceed with it is often confusing and it is to be regretted that many officers, even graduates of the War College, do not understand how it is to be attained. Some seem to think that indoctrination should come from or through the War College, but that can never be for the War College makes no pretence of laying down fixed rules for conducting war. Even after taking the course one officer will have one way of doing a thing and another an entirely different way, both ways being sound and in accordance with the best principles of warfare. The way to be followed by any command is, of course, the way of its commander, hence when indoctrination is attempted it must be done to accord with that commander's plans. If subordinates in the force have had the War College course the commander's work is much simplified, but whether they have had the course or not they must still be indoctrinated. How, then, may we go about doing it?

Subordinates are said to be indoctrinated when they have become so imbued with their commander's ideas that, given a task by the commander, they will execute the task in practically

the same way he would if performing it himself. Therefore the commander must cause his ideas to be absorbed by his subordinates until they actually think and act as he would or as he would want them to. Naturally this cannot come to pass if the commander stays away from his subordinates or keeps his ideas, plans, and methods to himself, so he does just the contrary. He constantly holds conferences with his officers regarding the operation and handling of the forces; he assumes war situations and explains how he wants the command to act in them; he assumes other situations, issues orders for the operations they demand, and causes the orders to be carried out by the subordinates in accordance with ideas he has enunciated to them; he trains his subordinates in order reading and order writing; he teaches them to estimate situations as they apply to their forces, to come to decisions as he would, and then to operate their forces in accordance with those decisions; he makes them realize that in their work all are striving to the same end, and he teaches them co-operation and co-ordination of effort. All these, and many other things, he must do, and he does them not with one officer at a time but with all the heads of the main subdivisions of his force gathered at conferences or games. Doing these things with those immediately under him, he requires them in turn to indoctrinate their subordinates, and so on down the line through the whole chain of command until the whole force works as a unit, united in thought, united in action.

As things are in modern navies, it often happens that neither the high commander nor his subordinates are familiar with all the uses or are well versed in the capabilities and limitations of the various forces and the new types with which they are working. Even in our own case it is often impossible for the "High Commander" to proceed rapidly with his work of indoctrination because neither he nor any one else knows exactly how to handle the new and not fully developed weapons. Even after all his preparation and training he must to a very large extent develop his plans and ideas after working with his forces to learn what they can do. Such procedure has been found necessary in our destroyer forces where the development of destroyer tactics and such indoctrination as is possible in a faulty "type organization" are going on hand in hand. However, in spite of the handi-

cap, indoctrination is going on in those forces just as it should be in every force and in every part of the Navy. But it will never go on *everywhere* until each officer holding a position of high command rises to the occasion and carries out his duty rather than just rest content with exercising his "rights." Not the least important part of that duty is the indocrination of his command.

The next step beyond indoctrination in preparing a command for its task is to make it "well disciplined." Let us get clearly in our minds what is meant by a well disciplined force. Specifically discipline is "training to act in accordance with rules," and forces are disciplined only when they have been so trained that they will always *act* in accordance with the wishes of their commander. In bringing forces to the state where they will always act in the way desired, the training sometimes becomes severe and corrective of faults by punishment, and, because of this, to many officers discipline has come to be so associated with chastisement and punishment that it is thought of only in connection with them. Officers having this idea seem to think that by chastising or punishing subordinates for anything and everything they thereby develop discipline in their command as well as a well disciplined force. That idea is not only entirely erroneous but possibly does more to reduce efficiency than any other one thing. Through forcing men not to do anything at all because they fear punishment if they do anything, it tends to defeat the very thing the high commander wants to accomplish. Discipline is never punishment. On the contrary it is a state or condition brought about not by punishment but by careful painstaking teaching and training on the part of the commander, by which a force becomes able to act in accordance with rules which are the commander's wishes as enunciated and taught by himself. While punishment for failure to so act is sometimes necessary it otherwise has nothing to do with disciplining forces. When constant punishment has to be resorted to it is *prima facie* evidence that the command has not been *trained to act* properly, and the fault lies not with the subordinates but with the commander himself. Not until the commander has taught and instructed his command in his ways, and has trained them *to act* in accordance with them, can he possibly have a well disciplined command.

A high commander must not try to hide his own neglect of duty by punishing his subordinates for not doing the things he has never told them he wants done. He may sometimes, and especially in peace time, evade paying the penalty for his shortcoming by using the power of his position to throw the blame on the helpless subordinate but he will never have a *trained* command. Punishment must be meted out when deserved but it should go to the one who deserves it, and unless he has truly trained his forces to his ways this will frequently be the high commander himself. As a matter of fact in a force trained to act in accordance with its commander's wishes, punishments are few because they are unnecessary. Training, not punishment, makes a disciplined force, and if the officer reaching high command will but bear this in mind and carry out what it implies he will have not only a force that will *act in accordance with his wishes* but one that will do so under *any* condition however impossible that condition may seem.

Since training and not punishment makes a well disciplined force, how may a commander go about such training? We have seen the steps he takes to organize and indoctrinate his force but training goes far beyond that. True, during their indoctrination the higher officers get something akin to training but it is at best only on the game board and is theoretical rather than practical. What the commander now wants is to put theory into practice in exactly the way it will be done in actual war. Obviously to do that is impossible and the nearest approach to it lies in operations that are largely sham. But in sham operations it is not possible to cover every detail of actual war in one grand maneuver, hence it is necessary to take up the various phases part by part and carry out each in a way as nearly like actual war as possible. *Movements*, either strategical or tactical, can be practiced in "fleet maneuvers"; hitting with guns, torpedoes, bombs, etc., can be practiced through actually firing them at targets under conditions similar to those of battle; and other phases can be practiced each in its own way. And so after he has indoctrinated his force a commander must lay out a schedule of practical exercises, by which each and every part of his force gets actual practice at sea in everything it has to do in carrying out the plans for fighting as deduced by the commander. While we can never at one time

hope to practice a force as a whole in all the details of its war operations, we can, by careful planning and taking the phases part by part, give the entire force and every part of it a tremendous amount of practice at sea, and sufficiently like war, to fulfil our requirements. Hence as soon as the commander has given his force sufficient indoctrination to make it know what he wants to do and his general plan for doing it, he must plan and carry out a system of actual practice that leaves no portion of his force untrained or overlooked. Fleet maneuvers covering each phase of the plan, target practice in every form of firing the force will be called on to use in battle, speed trials, economy in steaming, self-upkeep, communication, and every other detail can be *practiced,* and must be practiced over and over, carefully, systematically, and thoroughly until the force not only knows exactly what the commander wants done but *can do it* with precision, certainty, efficiency, and each part in co-ordination with all the rest. For this actual training the high commander alone is responsible, and until he has carried it through his command will never be disciplined or become a fighting team.

In the treatment of our subject up to this point little has been said of the teamwork required in a great fighting force, although in a way teamwork must be considered in every step the high commander takes. His plans for fighting must be based on it, his organization laid out to enable him to put it into effect, his indoctrination such as to make the theory of it known to his forces, and his training work practice his forces in it. In all that an efficient high commander does, *teamwork* exercises a dominating influence, and yet strange to say the principle of teamwork seems to have been lost sight of in recent years by many high naval commanders.

It is possible that the failure of the British fleet to win an immediately decisive victory at Jutland was due to its poor teamwork; in our own Navy if the various elements of the fleet have fully developed teamwork either in themselves or between each other it is not in evidence. Neither in battle, nor in the phases of a campaign that precede it, can any naval force hope to gain success unless its parts are ready and trained to make a tremendous and *co-ordinated* effort, and hence an officer coming to a position of high command, and especially to such a position in our Navy,

must devote great attention to *teamwork*. It is not sufficient to merely base plans in it, to organize forces for it and indoctrinate them in it. Having done all those things and having practiced each part of his force in its own particular task, the high commander must then train the parts *as a whole* in simulated war maneuvers. When he has done that, but not before, his command will be a *fighting team* and naturally no commander worthy of the name can ever rest content until his is a fighting team in fact as well as in theory.

A force organized to carry out its commander's plan, indoctrinated as to the plan and the way of executing it, and trained until it can actually carry the plan through in a perfectly executed co-ordinated effort has gone far in its way to being ready for its great task. Even then, however, it is not sufficiently ready and should a commander stop his work at that point his force will be far from being all it can and should be. Organization, indoctrination, and training, essential though they are, will not by themselves make a force always victorious. Back of those things there must be a greater quality, *a will to win*, and that quality must be so developed that the force will refuse to accept anything but victory. The quality in a force that gives it such a will to win that nothing less than victory will be accepted is known as morale, and it is so vital that unless a command has it to a superlative degree it not only may be defeated but probably *will be*.

Napoleon said "In war the moral is to the physical as three to one," and it is probable that if he erred at all he placed the moral factor too low. Certain it is that material things such as numbers, equipment, and perfection of operation can never bring victory to a force, unless that force is dominated by a will to win that victory. In spite of this self evident truth the training of forces is frequently focussed on giving them the ability to fight while the *will to fight*, which is the far more important element, has been left to look out for itself, and this in face of experience, which shows that even with less actual effort the moral factor can be developed just as surely and just as highly as can the physical. Since the physical factor, no matter how highly developed, is practically useless for war purposes unless glorified by the moral factor, it follows that a commander must develop

that moral factor to the utmost. The question for us then is how he may do so.

When a commander attempts to develop the quality known as morale he is confronted with something very different from the other phases of his task. Whereas organization, indoctrination, training, and teamwork are definite things that require definite action to bring about, morale—the will to win—is a mental attitude, a particular mental attitude, that is so indefinite as to be almost intangible. What goes to make up the particular mental attitude that will not accept defeat under any circumstances, that no matter what the suffering or loss may be still drives on to victory? What may a commander do to develop it?

Morale, for all purposes of war, is a state of faith; it is belief in an ability to see *anything* through to a successful conclusion; it is a measure of men's confidence in their cause, in their leaders, and in themselves. If this be true, we begin to have something definite to work on, for to develop morale it is only necessary to develop that confidence until it is absolute. And a system for that development can be devised by any able commander provided he himself has the measure of confidence he desires to inspire in his subordinates. Much of the work he can do himself and some of it no one can do for him, but a great deal of it can be done by a special organization put in the force for that particular purpose, provided the commander makes himself the *soul* of that organization.

It is impossible to lay out briefly the special organization necessary to develop morale in a force or to explain in a few words how such an organization goes about its task. However, it is unnecessary to do so for in certain books, like Colonel Munson's *The Management of Men*, both an organization and a system for the development of morale are so well explained that any high commander can perfect his own from them. Naturally the high commander should not delay starting the work along that line, but when he has done so he must remember that he still has other things to do to develop morale, and that these other things are *things no one can do for him*. Always his own example must show his confidence; always he must energize the system with the fire of his own faith; and always he must lead. While through his own efforts and those of his morale organization his forces

may develop great confidence in their cause and in themselves, he must never forget that these are but two legs of the tripod that makes morale. The third leg of the tripod is the troops' confidence in their leader, and the structure will fall just as surely from the failure of this leg as from the failure of any other. Hence unless a commander can inspire confidence in himself as a leader he will never have a successful fighting force.

The confidence of a force in its leader is based primarily on the strong personality of the leader himself, and this personality includes ability, devotion, and justice. A truly great leader has little difficulty impressing his ability and devotion on his subordinates. During the organization, indoctrination, and training of the force they have ample opportunity to weigh both, and they will weigh them for exactly what each is worth. Any failure of a high commander to carry out his duty along some such lines as have been discussed in this paper cannot but be known to his force, and though by other ways he may keep their love, their honor, and even their respect, during peace time, when put to the crucial test in war, they are bound to question both his ability and his devotion. When subordinates do that, the will to win in the sense meant in this paper cannot exist. However, even though by his work he clearly impresses both his ability and devotion on his subordinates, a commander who is lacking in justice to them can hardly hope to exact their loyal support when facing trying conditions. Only justice begets loyalty and unless held by the extreme of loyalty men cannot and will not make the supreme effort or the supreme sacrifice called for in war.

Though loyalty is really only one of the many elements that taken together bring high morale, it has such far-reaching effect on morale that it deserves some attention, and especially so since all too often those holding positions of high command do not always understand its principles or apply them to themselves. While in the sense ordinarily used loyalty is devotion to a superior and therefore works upward from the bottom, in the military sense it works both ways and to have its maximum effect there must be loyalty down as well as up. This fact is often overlooked, and we not infrequently see a commander exacting *all* from those under him and giving them little or nothing in return.

In fighting forces one-sided loyalty spells failure, for certainly no commander can expect from his subordinates anything more than he himself gives to them. The commander who fails to support his subordinates when they are faithfully trying to carry out his wishes cannot long count on their maximum support. The commander who in order to avoid punishment for his sins of omission or commission, throws blame on subordinates, has no right to expect, much less demand, devotion to himself. Yet time on time we see these obvious truths violated and find men who should be leading their subordinates to higher standards actually taking a low standard of action in their dealings with subordinates. How different it is for the commander who has the moral courage to stand by and with his subordinates in their hour of need! When his own hour comes they will stand by him to a man and no effort or sacrifice will be too great for them to make when he asks it. Therefore in our preparation for high command and when we come to high command let us not forget that the loyalty of our subordinates to us and all we do will be measured in kind and amount by our own loyalty to them.

There is no better way for a commander to show his loyalty to his subordinates than by having faith in them to carry out any task he assigns. It is to warrant such faith that commanders go to such great lengths to indoctrinate and train their commands, yet it often happens that even after they have done so they nullify their work either by taking charge of a subordinate's task or by including in orders detailed instructions for carrying it out. Showing, as it does, a lack of faith, such action is fatal to results and if persisted in not only reacts in the subordinate's loyalty to his commander, but also tends to destroy his initiative, the very thing on which a commander must rely when not in personal contact with the subordinate. When a subordinate knows his commander depends on him to carry through successfully his part in the general plan, in the way that seems best to him as the man on the spot, he will spare neither energy nor resources in doing so as long as there is life in him. This is exactly the spirit and will to win that the commander wants and must cultivate; but it never comes to a force whose commander tries to do anyone's work but his own. For this reason, if for no other, high commanders must leave all details of execution to their sub-

ordinates. Nevertheless there is another and quite as important reason for doing so.

Whenever a high commander usurps the province of a subordinate he does more than kill initiative and destroy morale, he puts himself in a position in which he cannot but neglect his own great task. From what has gone before it is evident that in attending to his own important duties a high commander has quite all the work any man can do and that if he undertakes the work of another he can do so only at the expense of the time he needs for his own. Furthermore, in doing it he sacrifices the *whole force* to a part, and even the part becomes worse off than it otherwise would be because it is trained solely to operate alone. We see an instance of this when a Commander-in-Chief takes personal charge of say his battleship force, and personally supervises all it does while giving little or no attention to the rest of the fleet. Because that task keeps him very busy he may feel he is doing all he can do and his full duty. On the contrary he is doing nothing that he should do and is actually *neglecting* his duty. No matter how perfect the co-ordination of battleships may become between themselves it will serve no purpose in war unless the battleships *as a group* co-ordinate with those of the other parts of the *battle fleet.* Even a perfectly trained *battle fleet* will be of little value in war if it cannot co-ordinate its efforts with those of the other forces that have to lead it to battle. This being true it becomes nothing short of fatal when a Commander-in-Chief concentrates his energies on only one part of his force, for he stands not only to get nothing from his fleet as a team, but also to get the absolute minimum from the part he concentrates on.

In the same way that a Commander-in-Chief often fails through usurping the work that belongs to subordinates so will any other high commander fail who does likewise. Yet over and over we find high commanders doing that very thing. They swamp themselves in details belonging to subordinates, and because they overwork themselves in doing so they imagine they are making progress even though they never give a thought to their own great task. Success in high command is never measured by the *quantity* of work done by the commander but only by the work he does on his own particular task, and high commanders should not

delude themselves on that point. To do so is absolute proof of incompetency and unfitness for the task. If a high commander cannot from his mission deduce his own task he certainly is not fitted for command. Neither is he fitted for it unless he sticks to that task, and to no other. In these two statements we have the very foundations of all success in high command—knowing one's own business and attending to it. When the high commander does that he does all, but the trouble is that many high commanders do not do it. Those who aspire to such positions should avoid the pitfall, but if they do it will be by their own efforts for there is no one else to point them fair.

What one must be and what one must do to succeed in high command is now before us. Even from this brief discussion it must be evident that he on whom the mantle of high command may fall has a responsibility and a duty he cannot evade without wilfully exposing himself, his command, and his country to disaster. While those in position of low command always have over them a higher commander who is competent to judge, and who does judge and pass on their work, the high commander has no such superior and if he so elects he can often leave undone those things he should do without himself paying any penalty for it. During war, should he then be in command, his country of course will judge him by the results he gets. But war may not come during his time in command, so even though the evil of his way lives after him he may not be held responsible for it. Ordinarily during times of peace the sole judge of a high commander's work is his own conscience, and if he chooses to salve that it is probable that no power superior to him will either question or doubt anything he does or does not do. During such times, though he has utterly failed to prepare his force for war, it is even possible a high commander may be considered a successful one for at that time, at least outside the Navy, no one knows or seems to care about the Navy's readiness to fight. But can we as naval officers neglect our duty simply because of that? Are any of us so deficient in moral obligation and sense of duty that we are willing to turn over to a successor a command which if war comes might bring odium on him and disaster to the country? Let us hope not, but at the same time let us not forget that our own Navy is not today either a fully organized or highly trained

fighting team. Were the way to make it a fighting team obscure, were there any doubt as to exactly what course a high commander should take to make it one, there might be some excuse for our not making it ready and keeping it so. But with the way so clear there certainly cannot be. Knowing that way, an officer worthy of the uniform he wears and of the trust his country has placed in him cannot and will not spare either himself or his efforts in following it.

Truly the principles of high command are embodied in the trinity—self preparation, planning, and execution—each of which follows the other in turn and none of which is of value without the others. Of these the first two concern themselves only with the high commander, but the last concerns itself with the entire command and is the measure of all that command does. No matter how well the commander may prepare himself, no matter how expert he may become in planning, those things go for naught unless he *organizes* his command to carry out his plan, *indoctrinates* it with the plan and method of carrying it out, *trains* it so it will act in co-ordinated effort in accordance with the indoctrination, and finally develops in it the *"fighting spirit"* and the *"will to win."* These are the things the high commander can do and must do. And they are the things he will do if he too has the *fighting* spirit and the "will to win."

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U. S. NAVAL INSTITUTE, ANNAPOLIS, MD.

THE LETTERS OF A RETIRED REAR ADMIRAL TO HIS SON IN THE NAVY

By Rear Admiral A. P. Niblack, U. S. N.

Letter No. 10.

TANGIER, "THE INTERNATIONAL WAIF."

"Hope Farm,"
Long Island, N. J.,
November 1, 1922.

Dear Son:

I am glad you are getting a little gunboating in the Mediterranean. To be sure you are in a destroyer, but most of the cruising done by destroyers away from the fleet is merely gunboating. This is because we are getting to be a real power in the world and have not enough gunboats and cruisers to keep up with our international peace obligations, requiring us to use destroyers instead, and a good thing too it is. They are well adapted to showing the flag as every one of them costs over $1,000,000, which you only have to go aboard to see why. When the average foreigner learns we have over 300 of them, exactly alike, it has a tendency to make him sit up. Then, too, it is not so expensive in personnel to have a destroyer do diplomatic work, and, with most of our cruisers and gunboats in the banana squadron, it helps make good on recruiting posters which invite young men to see the world through an air port.

Your description of Tangier amuses me. It is not the old Tangier because it is slowly starving to death commercially. You complain of the danger of landing there. Some day there will be a breakwater, but not yet because the Powers cannot agree even on letting a private company build one. The prospect for the moment, however, seems that they may at least agree on that much. Curiously enough there was a small breakwater or mole

there built by the British about 1664 during their occupation, but which was very laboriously destroyed by them when they unfortunately withdrew from Tangier in 1684 for reasons of economy. International jealousies have now very nearly strangled the life out of this international waif. It is tragic but has its cynical side.

The average American is puzzled by European diplomacy because he sees the various complications in Europe without knowing the secret intrigues which have brought them about. It requires an expert to sit in a game where secret understandings make all agreements reached as eventually futile as the secret understandings themselves.

A short time ago one of our cruisers visited Tangier and very properly saluted the port with the flag of Morocco at the main. Calls were made on the Sultan's representatives on shore and the usual other courtesies complied with. On arrival, the boarding officer from a cruiser of one of the Powers came on board and extended a "Welcome to Our City" in so many words. Now it is an amusing fact that with all the various aspirants to take Tangier away from the Sultan of Morocco through agreement of the Powers, by either giving it to some one Power or really internationalizing it, the United States has just as much right to a say in the matter as any other Power, as we have been thoroughly mixed up in this question from the very start. Yet we are so immodestly not claiming anything from Europe on account of the war (except, perhaps, the re-payment of money belonging to American taxpayers which our Government kindly loaned abroad to other governments as if it was really its own money) and we are so timidly flirting with Europe without apparently any intentions, that we are actually encouraging Europe to ignore us in our real international interests and to call upon us only to sweep up after their messes and to feed their starving women, children, old men and even young ones, due to international situations which we had no hand in creating.

As to a breakwater for Tangier, when a commercial company, backed by the French Government, recently got a concession from the Sultan to build a breakwater and execute much-needed harbor works, the British and Spanish interests were up in arms because of the overwhelming preponderance of French capital in the scheme. We have just as much right to share financially in the

creation of a free port at Tangier as any one else and also to participate in international committees to govern the port. Our Shipping Board certainly ought to have the opportunity to share in the advantages of this port without our being accused of mixing up in European affairs, for the "Algeçiras Pact" still holds as far as we are concerned. If ever a port is constructed at Tangier, the next step will be for passenger cars and freight trains to be ferried across from Spain to connect by railroad with Dakahr, thus shortening the route from Europe to Rio de Janeiro and Buenos Ayres by some ten days. As Europe is now much nearer to South America than we are this would place us at a still greater disadvantage. Of course Great Britain will never consent to a great commercial port being built at Tangier unless guaranteed of its neutrality in case of war because of its proximity to Gibraltar, just across the Strait, and with modern aviation and submarines so close to the entrance to the Mediterranean and on the route to India.

You know we have a Consul General at Tangier who is also the Diplomatic Agent. You speak of the recent surrender of Raisuli, the Moroccan bandit who has held forth so long in Northern Morocco. I remember very well in 1904 when he captured Perdicaris, who was living just outside of Tangier, and got himself in the newspapers by demanding $40,000 ransom. That was very slick of Raisuli. He had not reckoned with President Roosevelt, who sent a squadron to Tangier and on June 22, 1904, sent a telegram to the Sultan of Morocco demanding "Perdicaris alive or Raisuli dead." As the Republican Convention happened to be in session at the time and Mr. Roosevelt was nominated for a second term, you may be interested to know, as a by-product, that Perdicaris was released but not until the Sultan of Morocco had paid the $40,000. However, no person in Northern Morocco was in good standing unless captured by Raisuli and ransomed. It was a good deal like having appendicitis. It showed you were rich enough to afford the operation. To me, one of the most curious phases of the whole question was that the Flag Officer in our navy who went to Tangier in the flagship *New York* on that occasion got his first real insight into European intrigues, which profoundly influenced his career afterwards. A great many other Americans got their ideas of Morocco from this incident. But

where we really got interested and tied up with Morocco was in the Madrid Convention, in 1880, to which we sent delegates. Nearly every country had made commercial treaties with the Sultan of Morocco, leading to great inequalities as to international privileges, and the Convention effected mutual agreements as to equitable trade relations by which all countries were placed on an equal footing, and certain abuses of international privileges were to be corrected. It is a curious fact that today Great Britain and the United States are the only two countries which have not renounced the capitulations of the early treaties with regard to the rights of our citizens in Morocco. Immediately subsequent to the Madrid Conference an international agreement was added to the Convention with regard to the status of Tangier as an international port, and we were a party to it.

Of course, you have found Tangier delightful socially and you have played tennis and golf and gone to dances, for there is a charming European colony there and the diplomatic corps is extremely active. It reminds me of an eddy inshore of a strong current. It spins around rapidly but does not get anywhere, as there is no solution to the Tangier problem unless we cut it with an axe. While you may be fascinated with the roulette wheel and the good-looking young ladies, I think that the most fascinating chapter in recent diplomatic history has been the acquisition by France of its Protectorate over French Morocco. You are, of course, too young to be interested in history and I do not want to bore you, but at the beginning of this new century, France, through her colonial ventures in Madagascar, Cambodia, Algeria and Tunisia, had come to realize the special value of Morocco. Delcassé, the French Minister of Foreign Affairs, in 1901-2, quietly began the acquisition of French Morocco by negotiating for a secret understanding with Spain. Great Britain, however, was too alert and brought both France and Spain to her own terms, which were somewhat as follows:

What France wanted was a free hand in Morocco, but before she could come to an understanding with Spain she had to satisfy Great Britain, so, on April 8, 1904, the numerous outstanding differences between France and Great Britain, in various parts of the world, Newfoundland, Senegambia, Siam, Madagascar, New Hebrides, Morocco, and Egypt, were simultaneously settled by a

series of special diplomatic agreements. The two governments, "equally attached to the principle of freedom of commerce in Egypt and Morocco," agreed to maintain economic equality in both countries, but there were to be no fortifications of the coast of Morocco west of Melilla. It was on these conditions that France entered the Entente. The agreement pledged both governments not to alter the status of Morocco—but (1) France was to make a special treaty with Spain, and (2) secret articles were signed which provided, in case of the destruction of Morocco's independence, Spain and *not France* should get the territory bordering on the Mediterranean and Atlantic entrance thereto. This secret clause was not published until November, 1911. This Anglo-French Declaration was signed on April 8, and shortly afterward, October 3, 1904, a Franco-Spanish Declaration was signed, in which both governments remained "firmly attached to the integrity of Morocco," but secret articles arranged for its partition along the lines provided in the Anglo-French Declaration. Thus for its relief from French incubus in Egypt and other sources of friction, England paid France with something she did not own in Morocco, and secured thereby the real point of importance, viz., that France should be excluded from the Mediterranean and North Atlantic Coast of Morocco about the Straits of Gibraltar in favor of the weaker power, Spain.

On March 31, 1905, the German Emperor spent two hours ashore at Tangier, Morocco, and by a few remarks brought on the Conference of the Powers at Algeçiras, whose declarations were signed April 7, 1906, the United States being a signatory power. By this the nationality of Morocco was to remain intact, and all the Powers were to be on an equal footing, while Tangier was to be internationalized, and joint arrangements were made for police, finances, public works, and the joint development of Morocco by the Powers. England, Spain and France, during the Conference, knew of the secret agreements, but certainly neither Germany nor the United States did. These agreements, in effect, nullified the pact of Algeçiras, because both England and Spain secretly recognized France's dominant interests in Morocco, but pretended to agree to internationalization. In other words, we sat in a poker game with the cards stacked against us.

France has now, as we all know, established a protectorate over Morocco. The Franco-Spanish treaty of November 27, 1912, following a treaty which Germany practically forced on France on November 4, 1911 (which I will tell you about sometime), has caused active diplomatic friction between France and Spain, complicated by the fact that, in 1914, France, Great Britain and Spain drafted an agreement allotting to each nation that part of the government of the city each one was to undertake. The war came on and the agreement was not signed. This has tied things in a hard knot. France wants Tangier under her protection. By royal decree the King of Spain, in 1920, has affirmed that Tangier is assimilated with the Spanish-Moroccan ports of Cueta and Melilla, with the privileges of exports under existing treaties. Spain does not admit that Tangier has ever been under the authority of the Sultan of Morocco as "protected" by France. Great Britain does not propose to have any one Power build up a port at Tangier. Meanwhile the diplomatic corps at Tangier revolves dizzily on its own axis and gets nowhere. One minute Tangier is to be French, then Spanish, then England appears to intervene, and America is appealed to on account of having been a party to all the agreements. Spanish reverses in Morocco have further complicated the question. The amusing thing about the whole situation is that no one has ever suggested that the various treaties in connection with the port of Tangier be carried out. Diplomacy has almost reached that stage that the law has in the United States. No sooner is a law passed or an agreement made than everyone gets busy to see how they can beat it. That is the reason why we have so many lawyers in the United States and so many diplomats in Europe. No wonder we get the reputation for "shirt sleeve" diplomacy when we get so often done in the eye from the scraps of paper flying about.

Meanwhile it is interesting in Tangier to see the city recognizing the authority of the Sultan of Morocco, with Moorish, French and Spanish police and British, French and Spanish post offices, banks, hotels, cafes, shops, etc. Only the gambling houses are international. It is not improbable that the next generation will witness the construction of a tunnel under the Straits of Gibraltar in the vicinity of Tarifa, Spain, on one side and Tangier on the other. An amusing feature of this will be the custom house at

Tarifa. The word "tariff" comes from the tribute levied at Tarifa on traffic in the Straits of Gibraltar by the pirates of Tarifa. From the language used at our custom house by ladies I should judge the duties are still regarded as piratical.

By what I have said you will gather that we have the same rights and interests in Tangier as any other Power if we choose to exercise them. We have not renounced the capitulations in Morocco nor any of the treaties in which we have participated. We are in a position to drive any bargain we may choose to make which will safeguard our legitimate interests. In renouncing all compensations for our share in the war we have created the impression in the world that we have no rights, and only the privilege of helping. If we are afraid of Tangier as involving us in European affairs, let us consider it an African question with something to do about Liberia. Of course what I have said may seem to reflect somehow on somebody but it is like the man who said to another, "I did not say you took my golf ball. I only said I would have had a better chance of finding it if you had not helped me look for it."

Affectionately,

DAD.

(To be continued)

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U. S. NAVAL INSTITUTE, ANNAPOLIS, MD.

THE TRUE MEANING OF THE PHRASE "AN OFFICER AND A GENTLEMAN"

By Lieutenant (j. g.) H. E. Dow, U. S. N. R. F.

An officer is, from his position, a leader of men. He must show in himself such qualities as he desires to bring out in those under his leadership. A gentleman is exactly what the word signifies, a gentle man.

In the *Articles for the Government of the Navy* are found the following words:–

> The commanders of all fleets, squadrons, naval stations, and vessels belonging to the navy are required to show in themselves a good example of virtue, honor, patriotism, and subordination.

The possession of these four fundamental, as they may be called, qualities will produce neither an officer nor a gentleman in the fullest sense of the words. To them must be added initiative, ambition, loyalty, good judgment, and justice, together with a certain human kindness all cemented with an unfailing sense of courtesy and tact.

Virtue signifies courage or bravery, but not foolhardiness. There is no person more universally respected among men than he, who, having calmly figured the risk and counted the cost, proceeds with full knowledge of the danger involved to carry out his appointed duty quietly and confidently. It may be said that virtue is, in this sense, the bed rock of the character of a leader of men.

Resting closely on this foundation of virtue must be the corner stone of honor. Honor implies a high sense of duty, a scrupulous faithfulness to any trust involved, a thoughtlessness of personal advantage or disadvantage. An honorable man is one deemed worthy of honor by his associates, whether they be super-

ior or subordinate, and to be so deemed worthy means that a man must be brave and faithful in the performance of his duty and honest and sincere, not only with others, but with himself.

Patriotism is communal loyalty. A man's loyalty to his God comes first, his loyalty to his country next, for to his country, under God, he owes everything that he is, or has, and therefore for his country he must stand ready to sacrifice everything should need arise. True patriotism does not mean the fiery, flag waving, do-or-die-at-once mob spirit that rises so swiftly and burns so fiercely in times of real or imaginary national peril, and then dies to indifference as rapidly as it rose; it means steady, unswerving devotion to country that is not discouraged by indifference and neglect, that is willing to work steadfastly for the ultimate good of the country with those materials at hand, whatever they may be, and in so doing to inspire others with the same spirit.

Subordination may be said to mean military co-operation. A man's ability to subordinate his own wishes and desires, to throw himself with whole hearted co-operation into the carrying out of the plans of his superiors, has a wide and invigorating effect on all who come in contact with him. Men admire the officer or man who, with absolute self forgetfulness, drives on for the good of the whole, cheerfully taking his place as a cog in the great machine of military organization however unimportant the duty he may be called on to perform.

Initiative means the possession of the power to begin or undertake independently. No man is worthy to be an officer who is unable to act swiftly on his own responsibility when the need arises. The ability to make a correct, intelligent estimate of the situation confronting him, and, having made the estimate, to decide upon the right course of action is not enough. Having estimated and decided, he must be able to initiate the proceedings called for and carry them through to their logical conclusion with firmness and determination.

Loyalty should need no definition. Loyalty to the navy, the ship, the captain, the officers, the men, must be so ingrained as to be instinctive. The finest thing about it is that loyalty breeds loyalty. The bread of loyalty cast on the waters of daily work returns a hundred fold and an officer known to be loyal to his service, his superiors, his ship and his men is not a single man, he is a host, for when the pinch comes he will not stand alone,

but whole-heartedly supported by his comrades, and will not be found wanting.

Every man is endowed with a certain amount of common sense that may be developed by constant use. Not a situation arises in work or play that does not call for the exercise of this quality. A man who always seeks the best, which is always the common sense way, of doing whatever tasks are assigned him, will, when he meets emergencies, be said to exercise good judgment. After all, good judgment is only glorified common sense.

Ambition is the purpose to advance. No man who has not the will to push forward and improve himself mentally, morally and physically can ever hope to lead others upward. It is a truism that what does not advance must retrograde. There is no such thing as standing still.

Justice means fairness in praise or censure, equality in the assignment of tasks, reason in demands on subordinates, willingness to give credit where credit is due, even though it brings blame to the officer or man giving that credit. A just man is a man four square, not only with himself, but with the world.

Human kindness is intangible, it is the salt that leavens the whole loaf. Sifted down it means insight and foresight to relieve the cares of those weighted with heavy responsibility, to temper justice with mercy towards subordinates, to extend always the guiding and helping hand to those in need.

A man, gentle, unafraid in the face of danger, courteous always without condescension or servility, tactful, honorable in all his relations with mankind, patriotic, subordinate, an example to all about him of initiative, ambition, loyalty, good judgment, justice, and kindness; such a one fulfills in its highest sense, the true meaning of the phrase, "An Officer and a Gentleman."

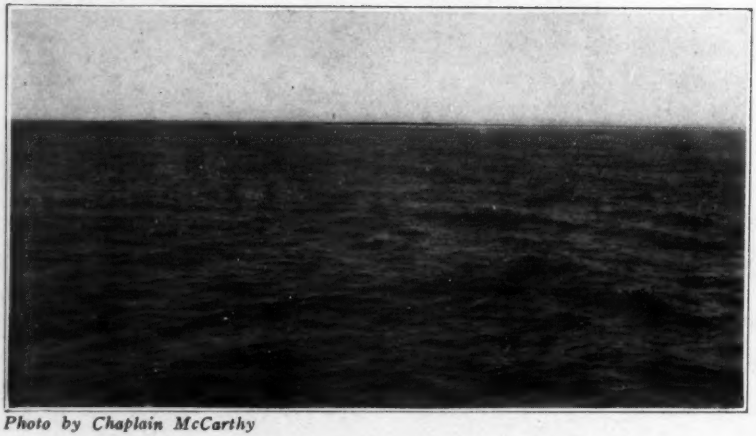
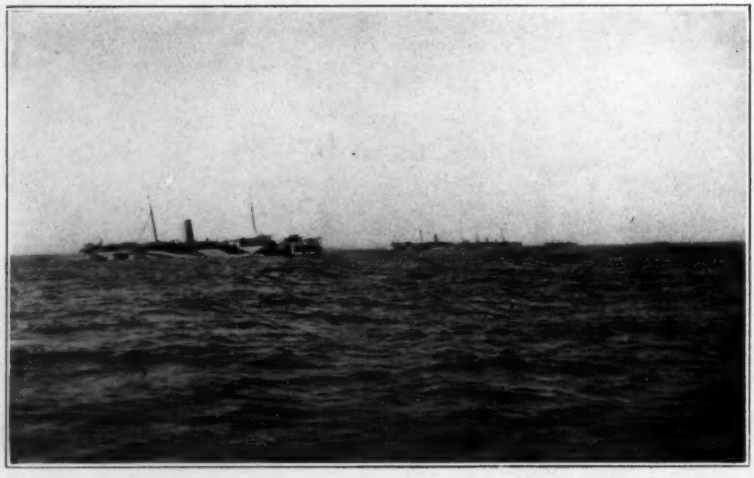


Photo by Chaplain McCarthy

WAKE ISLAND FROM A DISTANCE OF TWO MILES



VESSELS OF THE U. S. MINE FORCE ENGAGED IN LAYING THE NORTH SEA MINE BARRAGE

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U. S. NAVAL INSTITUTE, ANNAPOLIS, MD.

WAKE ISLAND

By Lieutenant Commander Sherwood Picking, U. S. Navy

On a recent passage the U. S. S. *Beaver* passed close aboard Wake Island, and as the sea was smooth, and we were in need of boat drill, it was decided to heave to and send a party ashore for a few hours. Although only a few hours were spent, a considerable amount of information was obtained which may be of interest to the Service.

Wake Island lies about twenty-five miles to the northward of the Great Circle course between Guam and Honolulu, and 1,334 miles to the eastward of Guam. There is no mention of it in the index of the sailing directions and a diligent search was necessary before a brief paragraph was discovered concealed at the end of the Marshall Island Chapter. The only chart of Wake is a plan printed on the sheet with Vatoa and Murea in the Society Islands and in South Latitude, so that this also had to be searched for.

Wake Island was discovered in 1796, and its position was fixed by the U. S. Exploring Expedition, better known as the Wilkes Expedition, in 1841. The chart gives this expedition as its authority but a search of the records shows that only a few hours were spent on shore, so the survey was probably merely a hasty plan drawn from the masthead. The island was taken possession of by the United States on January 17, 1900.

Wake is of interest by reason of its extreme isolation; over 300 miles from the nearest land, and that only another atoll; but especially because of its location on the route between Hawaii and our Asiatic Stations. The longest single leg between the Continental United States and Manila is that between Hawaii and Guam. This stretch of 3,337 miles is without a good harbor and, although well within the radius of capital ships, makes a trying and perhaps impossible voyage for small craft. That the

larger submarines can make this non-stop run was shown by the *S*-boats in November, 1921, but for smaller submarines and especially for anti-submarine and aircraft, it would be a most trying trip. It would be of great advantage could this voyage be broken.

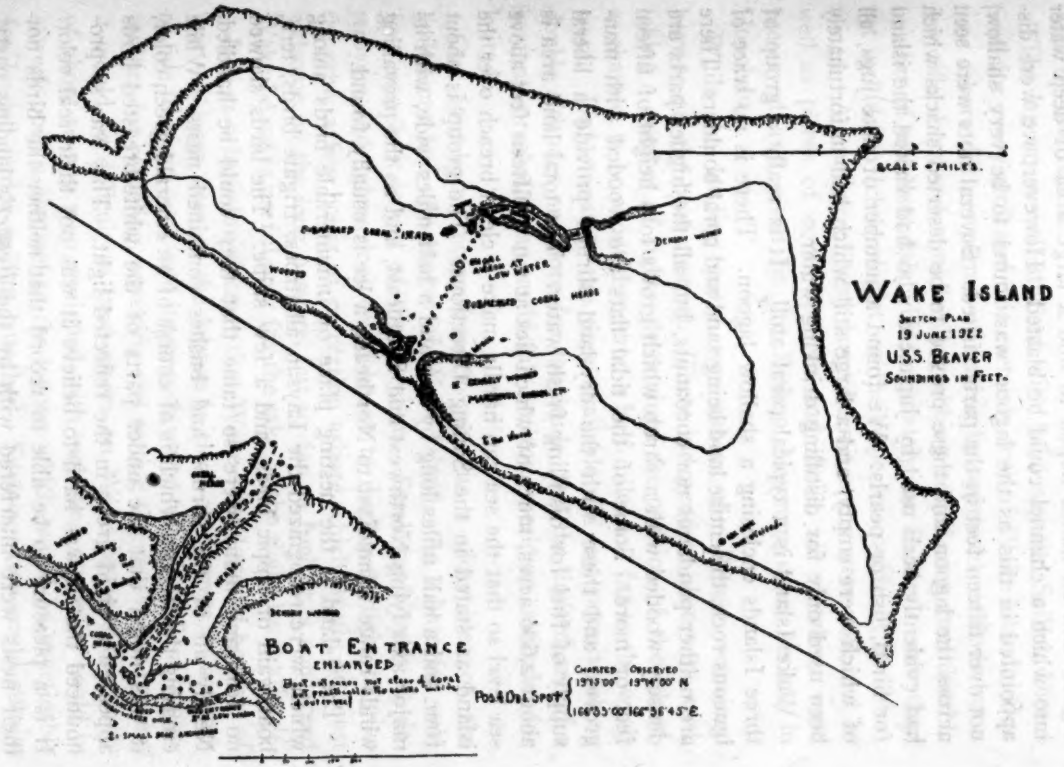
If the passage from Honolulu to Guam be made by way of Midway and Wake Islands, the total distance is increased to 3,517 miles, but is divided into legs of 1,149, 1,034 and 1,334 miles. Midway Island offers considerable advantages as a fueling and resting point for small craft. Any draft can anchor with fair protection in Seward Roads and fifteen feet can be taken into the well protected Welles Harbor. Destroyers have fueled in Seward Roads from deep draft tankers. The channel, although difficult, is well buoyed. As an aircraft station, Midway leaves little to be desired, as the lagoon offers a large area of safe depths for landings and get-aways.

Wake Island, although almost directly on the course between Honolulu and Guam is rarely visited and indeed is hardly ever sighted even by the transports which sail this route monthly. It is so low and lies so close to the course that it offers a serious danger to navigation and were it not for the almost constantly prevailing fair weather it would be most expedient to establish a light. From a strategic point of view, Wake Island could not be better located, dividing as it does with Midway, the passage from Honolulu to Guam into almost exact thirds.

Mr. Bywater's book, *Sea Power in the Pacific,* refers to Wake Island as a possible intermediate base and this book, in connection with problems in logistics where Wake Island would have offered a most acceptable fueling point for sea-weary ships, led the *Beaver,* homeward bound, on the Great Circle Course, to heave to for a few hours in the lee of the Island and land a small investigating party.

A spot marked "Good landing place" was discovered on the chart and the ship was hove to off this point. Although a considerable surf was running both whaleboats landed their parties without difficulty and were anchored a few feet off the beach.

The boat channel was found to be so choked with coral heads as to be impassable for a whaleboat except at flood tide. However, a pulling dory was towed in and this was pushed into the


SCALE 4 MILES.
WAKE ISLAND
SKETCH PLAN
19 JUNE 1922
U.S.S. BEAVER
SOUNDINGS IN FEET.
WOODED
SUBMERGED CORAL HEADS
BOAT ENTRANCE
ENLARGED
Pos'd Dis'd Spot
CHARTED
OBSERVED
19°19'00"
19°16'00" N
166°35'00"
166°38'45" E.

lagoon. The chart of Wake Island gives no soundings in the lagoon and all hands hoped to find a large area of deep water into which a channel could be blasted. However, we were disappointed in this as the lagoon was found to be very shallow, not over fifteen feet in the parts visited. Several huts were seen across the lagoon and these proved to be deserted shacks which had evidently been used by Japanese who had visited the island for birds, fish or pearls. We found a number of sake jugs, all of which were empty, and a large still which had unfortunately been used only for distilling drinking water.

Wake Island is a typical coral atoll. It is really a group of three Islands enclosing a shallow lagoon. There is no trace of igneous rock, the entire land being sand and coral boulders. There are neither pandanus nor cocoanuts, but all the higher parts are densely wooded with a shrub which grows to a height of fifteen feet or more. Some of the tidal flats are wooded with mangroves, and these with the dry-land shrubs provide a liberal supply of fuel for distilling fresh water. The total land area is about 2,600 acres, much of which lies at ten to fifteen feet above sea level so that the sea can hardly make a clean breach over the island as stated in the Sailing Directions. The group is about four and a half miles long by one and a half miles wide, with its major axis lying Northwest and Southeast, and as the prevailing winds range from East to Northeast, a lee is usually found.

The Island is the nesting place of innumerable birds among which were recognized the Laysan albatross, frigate birds, tern, boatswain or tropic birds, and a few snipe. The birds showed no fear and many were so tame that they could be handled. Nearly all of the shrubs and bushes contained nests. While crossing the lagoon, which is of course of an emerald green color, it was noted that the under parts of the white-breasted birds appeared a vivid green in the reflected light. This was so pronounced that it was hard to believe it was not their real color. It is a pleasure to be able to record that neither the birds nor their nests were interfered with by the *Beaver's* landing party. Several large rats were seen ashore, probably the survivors of a shipwreck. These must live on eggs and young birds and for the welfare of the colony it is unfortunate that they should have been introduced. A few lizards were seen and these with the

rats and birds probably comprise the whole of the land inhabitants of the Island.

"The lagoon is well stocked with fish" say the Sailing Directions for every atoll and it is certainly true of Wake Island. Our time ashore did not permit of fishing by approved methods but a few rifle shots and some lively grabbing netted us a considerable number of excellent fish. Unfortunately the *Beaver's* crew does not include an Ichthyologist, so their species could not be determined. A number of very large hermit crabs were collected as well as pieces of coral, sponges and shells, all of which were preserved and given to the Bishop Museum upon arrival in Honolulu.

While the landing party was ashore the *Beaver* remained hove-to off the boat channel. Three independent observers, each taking a number of sights, determined the position of the island, as charted, to be about three and a half miles too far to the westward. Unfortunately the time available did not permit taking double altitudes on shore for longitude, and the limited arc of a sextant precluded an artificial horizon meridian altitude for latitude.

Our four-hour reconnaissance gave us a clear idea of the limitations and advantages of Wake Island. As a base for surface vessels it is out of the question. Small craft such as destroyers and submarines could heave to during daylight to give the crew a few hours of recreation ashore which would be most welcome on the long passage, but so far as fueling is concerned Wake Island is useful only for the sake of the slight lee it affords.

It is as a base for aircraft that Wake Island would become of use. A large area of the lagoon is clear of dangers to a depth of five feet and over, and its smooth water offers excellent opportunities for refueling, repairing and resting the crews. At present it would be difficult to land stores on Wake but a shore party of about twenty men equipped with tools and dynamite could in a week open a channel to the lagoon which would be practicable for loaded motor sailing launches. Such a party could subsist itself indefinitely on Wake Island, especially as supplies could be landed from the transports which pass at least once a month. If the long-heralded trans-Pacific flight ever takes place, Wake Island should certainly be occupied and used as an intermediate resting and fueling port.

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SHIPBREAKING IN GREAT BRITAIN

By E. C. Hamner, Jr., Naval Constructor, U. S. Navy

Shipbreaking has been an industry in the British Isles for many years, and so there are plants, having men trained to this work, that can do it quickly, systematically and economically. During the war, every old vessel that could be got into sea-going condition was put into active service. No vessels, naval or commercial, were broken during that period. When the war was over, nearly all countries possessed large quantities of tonnage, much of which soon became unprofitable to operate. Breaking of old ships, especially obsolete Naval vessels, became a large industry, and many plants were established in the British Isles to carry on this work. When scrap iron was in demand this was a lucrative business, but as time went on and the scrap market weakened, it required the greatest economy in breaking to make it pay. Today Germany, on account of cheap labor, and the demand there for scrap, is about the only country that can break ships profitably; consequently, Great Britain has found it necessary to dispose of large quantities of Naval tonnage to German Ship Breaking firms as no market was available at home.

It is rather a pitiful sight to go to the knackers yard and see great battleships, cruisers, destroyers, and other vessels that served so valiantly in the war, torn to pieces and stripped in this ruthless manner. These once proud monarchs of the seas, in the process of breaking, look, for all the world, like masses of twisted and broken wreckage after some great storm has passed. The blast that breaks them up, however, will later mould them into useful articles which will go to the four corners of the earth to help rehabilitate the desolation wrought by war.

The breaking plants must have deep water where ships can be moored, or else quay walls or piers to tie them up to during the

first part of the breaking. If moored in deep water, barges and derricks are necessary to handle the scrap from the ship to the shore, but where piers or quay walls are available this handling of weights is done, to a large extent, by locomotive cranes. When a ship comes to the plant to be broken, she is laid alongside of the pier or quay wall and the non-ferrous metal is removed, as far as possible, before the real breaking begins. Parts of the decks are cut out so that engine rooms, dynamo rooms, etc., may be more accessible. All auxiliary machinery that can possibly be sold, such as motors, dynamos, winches and pumps, instead of being broken to scrap, are carefully handled and kept intact; they are then removed to the storehouses, carefully cleaned and stored. All furniture from staterooms, cabins, and offices, that may be saleable, is also carefully removed, cleaned, and polished, to enhance its value, and stored for sale. The other non-ferrous metal, including piping, wiring, fittings, etc., is removed and sent to the sorting sheds.

The sorting sheds are usually temporary structures with dirt floors, and are equipped and fitted to break up non-ferrous metals to crucible sizes. In one other large plant, these sheds, which are conveniently located to the main piers where the non-ferrous metal is taken from the vessel, are equipped with certain tools to facilitate the breaking of the scrap. Along one side of the building runs a long work bench fitted with vices, at which boys and unskilled men remove bolts and nuts from flanges, and generally disassemble non-ferrous metal so that it can be cut into sizes by shears. Down the center of the shop there are three or four medium sized shears, and several smaller ones, for cutting the metal to crucible sizes. There are also installed tumbling barrels to clean paint and dirt from the sheared metal. All of these machines are driven by shafting which is usually driven by a motor that has been salved from one of the vessels. On the other side of the building are a series of bins, in which the sorted metal is stored; bins for the various kinds of metal, such as copper, yellow metal, gun metal, babbit and lead. Lead is usually melted into pigs, but no other kind of metal is melted. The larger non-ferrous castings are brought outside of these buildings and heated either by building a wood fire around them, if they are very large, or put into improvised furnaces which burn wood. The wood

used is that salved from decks and ceilings which is only good for use as firewood. After the metal is heated it is broken up by a drop weight which is handled by one of the cranes. A large piece of armor plate is used for the anvil; the drop weight usually consists of a smaller piece of armor plate, fitted with a ring bolt for hoisting, and operated by a trip hook. These drop weights are also used for crushing large copper pipes, or other bulky pieces of metal, so that they can be cut to crucible size by the shears. All metal that is saturated with oil is placed in the improvised furnaces to burn off the oil.

Non-ferrous metal is handled expeditiously by this method and, after sufficient quantities are on hand, it is either shipped in bulk to some foundry in Great Britain or barrelled for foreign shipment.

In removing non-ferrous metal from vessels, care must be exercised to avoid any piping or valves being removed that will open the vessel to the sea, for a large vessel sunk alongside of a pier is not always economically raised. I have seen one large battleship that had suffered from such a mishap.

After the bulk of the non-ferrous metal has been removed, the real breaking of the ship proper is begun. The ship is stripped of metal from the top downwards. It is the practice to first remove the turret tops, and then lift out the guns and turret machinery. In breaking the turrets a cut is made down the face of the turret about three or four inches wide, the bolts removed, and the turret plates can then be knocked down without removing each locking key. After the turrets have been dismantled the funnels, bridges, and superstructures, are broken; the tripod masts being left as long as possible for use as derricks in lifting heavy weights. After the top hamper, superstructure, and turrets, above the main deck, have been removed, the ship is cut down deck by deck, the wood being saved for lumber, or for heating castings as described above, or sold for firewood. All heavy plating is cut to furnace size by acetylene burners, either aboard ship or on the quay walls or piers abreast the ship. The framing and plating back of armor is cut by burners and the armor allowed to fall inboard on deck; from there it is handled by the crane and later cut by burners to furnace size. Plate of 20 pounds and under is taken out in as large pieces as the cranes can handle,

and later cut to size by shears, as this is more economical than burning it. The ship is cut down as far as is considered safe, and then towed to a shelving beach and beached at high tide, which leaves her entirely exposed at low tide. By this time so much weight has been removed that the draft of the ship is very small. On this shelving beach the breaking process continues until the whole vessel is cut up.

Oxy-acetylene is used entirely for cutting all structural parts of the ship; the heavy plating and armor plate are cut to furnace sizes and shipped in bulk by ships to the steel foundries. The lighter plate is usually sold to firms who straighten it first, and then stamp it into washers, wrenches, spanners or other small tools.

Most plants use portable metal bins to transport the metal after it has been cut to furnace size. These bins are made from about ten pound plate. They are about seven feet long and four-and-a-half feet wide; on three sides they have side plating to the height of about two-and-a-half feet. In the side plating are holes so that cranes can pick them up with sling hooks and transport them to any desired place. The bins are placed on the ship and the metal, after being cut, is put into them; when the bins are lifted from the ship they are weighed by a clock scale, weighing up to ten tons. This clock scale is used on the crane hook so that the bin and contents are weighed when they are picked up. The weight is marked on the bin with chalk and, as each bin is numbered and the tare of it known, the weight of the contents can be recorded. When a carrier ship is ready, the cranes pick up the bins and dump the contents directly into the ship's hold, so that a great amount of handling of heavy metal is avoided. These bins are also used to transport non-ferrous metal to the sorting shops and, in general, they serve the same purpose that portable platforms do in shops and storehouses where lifting trucks are available.

The breaking gang aboard a battleship consists of about sixty to seventy men, under a foreman who has direct charge of all work on that particular ship. About eight men are employed burning metal, with eight boys as helpers to learn the trade; about four riggers are necessary; the remainder of the gang are unskilled laborers. The work is crude and rapid. No care is

taken except with articles or machinery that can be sold as such. A careful inspection is made, however, to see that all non-ferrous fittings, bolts, nuts and washers, are removed from the metal before it goes into the handling bins. Shipbreaking firms in the British Isles generally consider that sixty or seventy men to a ship is the most economical number that can be used efficiently. With this number of men a battleship can be completely broken in about sixteen months. In Germany, where labor is at present cheap and the demand for scrap great, a maximum of about two hundred men are employed to each battleship, and the breaking time is reduced to nine or ten months.

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THE SPIRIT OF THE OFFENSIVE

By Lieutenant Commander H. H. Frost, U. S. Navy

I. The Spirit of the Offensive and Offensive Operations

When Napoleon was asked how one might become a great captain, he said: "Wage offensive war like Alexander, Hannibal, Cæsar, Gustavus Adolphus, Turenne, the Prince Eugene, and Frederick."

All these commanders were imbued with the spirit of the offensive, but only one of them—Alexander—always acted absolutely on the offensive at all times, that is, always advanced and attacked with his full force without the slightest delay. All the others upon occasion were forced to limit their operations on account of unfavorable conditions over which they had no control. This was particularly so in the cases of Hannibal and Frederick; these generals in their later campaigns were forced to discontinue those bold and daring offensives which followed each other in such close succession during their first campaigns. However, it is undoubtedly a fact that these great leaders showed as great a talent and as great a spirit of the offensive in these later campaigns as they did in the most brilliant marches and battles of their earlier careers. Considering the great inferiority in numbers, the decrease in the quality of their troops through exhaustion and losses, and the generally unfavorable political conditions which both these leaders had to contend with in their later campaigns, it is believed that both of them acted with as great boldness and daring as in their first operations, when picked troops were available, when their enemies were comparatively unskilled in war, and when the political situations were much more favorable.

Napoleon himself in his later campaigns was compelled to limit his offensive operations, due to the small numbers and inferior quality of his troops, but even so when fighting in the immediate

vicinity of his capital, and when all his marshals had given up hope, he acted with a superb spirit of the offensive unequalled in any of his triumphant marches into Rome, Vienna, Berlin, and Madrid.

Alexander excepted, there are only two other leaders of long and varied experience who never limited to any degree their offensive operations. These are Suvorof and Nelson. All other leaders have deemed it necessary to do so at times. That this was not esteemed a fault by the Romans will be seen from Plutarch's opinion of Lucullus: "The most sagacious and experienced Roman commanders made it a chief commendation of Lucullus, that he conquered two great and potent kings by two most opposite ways, haste and delay. For he wore out the flourishing power of Mithridates by delay and time, and crushed that of Tigranes by haste; being one of the rare examples of generals who made use of delay for active achievement and speed for security."

The spirit of the offensive may and should be present at all times, either in absolute or limited offensive operations. The application of this spirit in war results in carefully considered employment of the maximum force available in persistent, active, rapidly conducted, and venturesome undertakings against the enemy for the accomplishment of missions, and the infliction of losses proportionate to our strength and the advantages and difficulties of the strategical or tactical situation with which we may be confronted.

In order to make use of this spirit of the offensive so as to decide the war in our favor in the shortest possible time, we must comply with three requirements:

1. Build up a personnel filled with the spirit of the offensive.
2. Develop an organization of such precision and mobility that this spirit may be effectively applied to it.
3. Actually apply the spirit of the offensive to maximum effect on all occasions.

II. METHODS OF BUILDING UP THE SPIRIT OF THE OFFENSIVE

There are various methods of fulfilling the first requirement, that is, of building up a personnel filled with the spirit of the offensive:

1. Having it inherent in our race.

2. Having it instilled in a military or naval service by long tradition.

3. Developing it in a service by persistent instruction.

4. Encouraging officers to read and study military and naval history, so that the value of an offensive spirit will be demonstrated and inspiration can be derived from the exploits of great commanders.

5. Appointing leaders who will inspire this spirit in their subordinates by their character and actions.

6. Building it up by winning victories over the enemy, so as to prove to our personnel that we have the ascendency over him.

III. INHERENT MILITARY SPIRIT

In the past certain nations and races have been inherently bold and venturesome. In most of these cases fighting was the sole business of the nation or race and these people naturally became inspired with a wonderful fighting spirit, or the sacred fire, as Napoleon was wont to call it.

Sparta was such a nation; though its people were of the same race as the rest of the Greeks, they were pre-eminent in bravery, boldness, and love of warfare. This was due to the remarkable code of laws enforced by Lycurgus, who made their daily training and preparation for war so arduous that actual warfare was welcomed as a relaxation. One of their laws prohibited the use of any fortifications, thus making it imperative that the war be carried into the territory of the enemy. As a result of this policy no invader set foot on Spartan territory for a period of six hundred years.

The Norsemen were, perhaps, even more aggressive and venturesome than the Spartans, for they went greater distances from their homes and generally in smaller numbers. The stories of their boldness and heroism are almost incredible. Their chief warriors were called "Berserks" because they refused to use coats of mail and went into battle stripped to the waist. In many bands it was a set rule that wounds received in battle could not be bandaged until the next day.

Civilization has so altered the life of nations that none are now organized, as were the Spartans and the Norsemen, solely for the purpose of warfare.

Conan Doyle's hero of the Napoleonic Wars, Brigadier Gerard, was wont to say that "all soldiers were equally brave, but that the French were slightly the bravest." The peoples of all the great nations today doubtless all hold the same opinion, but it can be said with certainty that our people are surpassed by those of no other nation for boldness, aggressiveness, originality, and initiative in their everyday life. Though we are not a military nation and have made little attempt to keep up our military and naval tradition, the recent war has proved that our people were splendid fighters when once brought into contact with the enemy. It may then be concluded that the material available for service in the army and navy has an inherent spirit of the offensive, and that very little will have to be done after its absorption into the service to complete the development of a most aggressive fighting spirit. What we must guard against particularly is a decrease of this spirit due to exhaustion in war and due to the principle of self-preservation, to which most men are subject, and which so limits and hampers all offensive action.

IV. THE EFFECT OF TRADITION

When a nation is not composed solely of fighting men, an officers' corps or special body of troops may be developed with such a splendid tradition that new officers and men entering the organization will automatically become imbued with the fighting spirit which animates it.

The Thaban Sacred Band is an example of such a special body of troops. It was composed of only three hundred young men, but all of these were specially selected and all were attached to each other by personal affection. These were the first troops which defeated the Spartans in the open field and they performed remarkable feats of valor in all the battles of Pelopidas and Epaminondas. Until the Battle of Chæronea they were never defeated. It was the only defeat they ever suffered. Philip of Macedon, walking over the battlefield, wept when he saw the bodies of the entire three hundred lying in one spot just as they had fallen before his phalanx, and said: "Perish any man who suspects that these men either did or suffered anything that was base."

The Germans were generally very unsuccessful and erratic in warfare until Frederick the Great built up an army tradition and established an officers' corps which was perpetuated from father to son down to the World War. Field Marshal von Hindenburg describes the effects of this tradition as follows: "The historic fame of any military body is a bond of unity between all its members, a kind of cement which holds it together even in the worst of times. It gives place to an indestructible something which retains its power even when, as in the last great war, the regiment has practically had to be reconstituted time after time. The old spirit very soon permeates the newcomers." The Baireuth Dragoon Regiment, which distinguished itself during the Roumanian campaign of 1916, then still wore on its cartridge boxes the number "67," denoting the number of standards taken by the regiment in the great cavalry charge at the Battle of Hohenfriedberg.

The English are generally credited with being a commercial, and not a warlike nation, but nevertheless their naval and military services have been noted for their warlike spirit. The Royal Navy in the sixteenth, seventeenth, and eighteenth centuries beat down the Spaniards, Dutch, and French in a wonderful series of successes; during this long period their officer corps was animated by a remarkable spirit of the offensive, which was transmitted on by tradition from one war to the next.

The Samurai in Japan were a military clan greatly noted for their daring and high spirit. Nitobe thus describes an incident which well illustrates their noble courage: "It passes current among us as a piece of authentic history, that as Ota Dokan, the great builder of the castle of Tokyo, was pierced through with a spear, his assassin, knowing the poetical predilection of his victim, accompanied his thrust with the couplet—

> Ah! how in moments like these
> Our heart doth grudge the light of life;

whereupon the expiring hero, not one whit daunted by the mortal wound in his side, added the lines—

> Had not in hours of peace,
> It learned to lightly look on life."

It was the repetition of such stories as these to the Japanese youth, together with other military instruction, which made the

Japanese so careless of life and so fearless of death in the Russian War.

Our own navy has been blessed with a history and tradition unequalled by any. Although there have been some attempts, we have not made use of this splendid tradition as we should have for the instruction of our personnel. Nevertheless, the spirit of the offensive has always been alive in our service, and, although little opportunity was afforded for us in the World War to show this spirit in action, it is certain that had such opportunities been presented, our commanders at sea and in European waters would have made the most of them. It should be a matter of universal regret that the projected attack on Cattaro, or some other undertaking of equal difficulty, could not have been carried out by our naval forces. We have now to go back sixty years to the time of Farragut to find an example of such an operation, and no price would have been too dear for us to pay in order to demonstrate to our own personnel and to the other nations that we are still animated with the spirit of our greatest admiral.

V. INSTRUCTION AND INDOCTRINATION

In a number of cases the spirit of the offensive has been developed in a service by persistent instruction and indoctrination, even though that service may have had little or no history or tradition. It was in this way that Frederick William the First built up the wonderful army that he turned over to Frederick. Up to his time the Prussians had little or no reputation for fighting. In fact, during the Thirty Years' War, the Elector of Brandenburg had been forced to allow Gustavus to march through his country, saying to his councilors in despair, "*Que faire; ils ont des canons*" (What do; they have the cannon). Frederick William, with the aid of old Prince Leopold of Dessau, trained the Prussian Army for twenty years, but during this time they had scarcely been under fire. It was with this army, entirely without war experience, that Frederick won his victories over the veteran Austrian and French troops. The Prince de Ligne, an Austrian officer, thus describes the attack of Schwerin's infantry in the first engagement of the war: "I never saw anything in my life more beautiful. They marched with the greatest steadiness, arrow-straight, and their front was like a line, as if they had been

upon parade. The glitter of their arms shone strangely in the setting sun, and the fire from them went out no otherwise than a continued peal of thunder."

Beginning about 1890, the entire French military doctrine was changed from one in which the defense predominated to the old Napoleonic spirit of the offensive, the sacred fire, as he called it. Marshal Foch, then an instructor at the French War College, played an important part in this change; his longing for the offensive and his fighting spirit is illustrated by a story told of him by Repington in September, 1918: "I heard that when Balfour asked Foch what he meant to do, the Generalissimo spoke no word, but threw himself into a fighting attitude, hit out hard with his right fist, then hit hard with his left, and then gave the *coup de savate* with his right and left leg in turn. It is quite like him!"

It is true that Suvorof's soldiers were to a great extent schooled in war against the Turks, but nevertheless their peace training had much to do with their remarkable successes. Their general's fiery doctrine is illustrated by the following extracts from his *Oral Instructions for Training:*

"Keep a bullet for three days, sometimes for a whole campaign, when there's no need to use it. Shoot rarely, and when you do, aim; with the bayonet, strike hard; the bullet misses, the bayonet doesn't miss; the bullet's a fool, and bayonet's a fine lad.

"Attack. Leg supports leg, arm strengthens arm; many die in the volley; the enemy has the same weapons, but he doesn't know the Russian bayonet. Extend the line—attack at once with the cold steel; extend the line without stopping, the Cossacks to get through everywhere. In two lines is strength; in three half as much again; the first breaks, the second drives into heaps, the third overthrows.

"Strike once—throw the pagan from your bayonet; dead on your bayonet, one strikes at your head with his sword. Sword at your neck—jump back a pace, hit again, strike another, strike a third; a champion will kill half a dozen, and I have seen more. Keep your bullet in your musket; three leap at you—knock down the first, shoot the second, kill the third with your bayonet."

In our service, instruction in the advantages of the application of the offensive spirit may be given in two ways:

1. In the course of instruction at the War College and through the various papers issued by the War College.

2. In the official instructions for the conduct of war.

At the War College it should be remembered in tactical games and chart maneuvers that the moral effect, so important in war, is not present, and that the spirit of the offensive will always have a much greater effect in war than at the War College, although even there it will have its effect.

In all official instructions for the conduct of war the spirit of the offensive should permeate every paragraph. Activity, energy, initiative, speed should be everywhere encouraged, and instructions should be stated in positive, affirmative language, and not in negative prohibitions; phrases which might encourage excessive caution or inactivity should invariably be deleted.

VI. MILITARY HISTORY

To become completely imbued with the spirit of the offensive and the military idea it is desirable to read and re-read military history, whose pages are more fascinating and interesting than any fiction could be.

It soon becomes a definite conclusion of the reader and student of military history that victory comes to him who, after carefully weighing the situation, is willing to run risks, and carries out his plans with energy and boldness.

But even more valuable is the inspiration which such reading has been able to give to great commanders. In order to show the sources of such military inspiration a few pictures will be presented.

The ten thousand Greeks were in the center of the Persian Empire; their Persian commander had been killed in battle; their own Greek commanders had been assassinated by the Persians; they were thousands of miles from home, and surrounded by innumerable enemies. In this situation only one man rose above the difficulties and dangers which threatened them. This man, Xenophon, an unknown adventurer, who had never before held a command, addressed them with the calm assurance of an experienced general. "You are certain," he said, "that it is neither numbers nor strength which gives the victory in war, but that whichever side advances on the enemy with the more resolute

courage, their opponents, in general, cannot withstand their onset."

Read Plutarch's description of the Spartans advancing into battle: "When their army was drawn up in battle array and the enemy near, the king commanded the soldiers to set their garlands upon their heads, and the pipers to play the tune of the hymn to Castor, and himself began the pæan of advance. It was at once a magnificent and terrible sight to see them march on to the tune of their flutes, without any disorder in their ranks, any discomposure in their minds or change in their countenance, calmly and cheerfully moving with the music to the deadly fight."

The Nervii enter history but once. They were all killed in one battle with Cæsar's legions, but the conqueror tells us what kind of men they were: "But the enemy, even in the last hope of safety, displayed such great courage that when the foremost of them had fallen, the next stood upon them prostrate, and fought from their bodies; when these were overthrown, and their bodies heaped up together, those who survived cast their weapons thence, as from a mound, and returned our darts which had fallen between the armies."

We have only a few myths to tell us of the wonderful race of fighting men who lived in northern Scotland and Ireland during the first two centuries of the Christian era. The supposed poems of Ossian, which so inspired Suvorof and Napoleon, tell us of Cuchullin's last battle: "The chief of Erin overcame; he returned over the field with his fame. But pale he returned! The joy of his face was dark. He rolled his eyes in silence. The sword hung, unsheathed, in his hand, and his spear bent at every step. 'Carril,' said he in secret, 'the strength of Cuchullin fails. My days are with the years that are past: and no morning of mine shall arise. They shall seek me at Temora, but I shall not be found. Cormac shall weep in his hall, and say "Where is Tura's chief?" But my name is renowned; my fame is in the song of bards. The youth will say in secret, "O let me die as Cuchullin died; renown clothed him like a robe; and the light of his fame is great." Draw the arrow from my side; and lay Cuchullin beneath that oak. Place the shield of Caithbat near, that they may behold me amidst the arms of my fathers.'"

The Duke of Alva, after massacring every person in the little town of Naarden, which had absolutely no means of defense, paid a perfect tribute to its brave burghers in his report to the Spanish king: "It was a permission of God that these people should have undertaken to defend a city which was so weak that no other persons would have attempted such a thing."

Field Marshal Browne, an Irish soldier in the Austrian service, is little known to any of us; yet a little story of him, written by one of his officers, makes one of the beautiful pictures of history: "You saw the great man, how he sacrificed himself to this enterprise. What Austrian field marshal but himself would have ever lowered his loftiness to lead, in person, so insignificant a detachment, merely for the public good! Sharing with his troops all the hardships, none excepted, of those critical days; and in spite of a violent cough, which often brought the visible blood from his lungs, and had quite worn him down, exposing himself, like the meanest of the army, to the tempests of rainy weather. Think what a sight it was, going to your very heart, and summoning you to endurance of every hardship—that evening when the field marshal, worn out with his fatigues and his disorder, sank out of fainting-fits into a sleep! The ground was his bed, and the storm of clouds his coverlid. In crowds his brave war-comrades gathered round; stripped their cloaks, the coats, and strove in noble rivalry which of them should have the happiness to screen the Father of the Army at their own cost of exposure, and by any device to keep the pelting of the weather from that loved head!"

At the Battle of Prag, Field Marshal Schwerin, seventy years old, seeing his own regiment in retreat, seized the colors and led them back to the attack along a narrow causeway. "Five bits of grapeshot, deadly each of them, at once hit the old man; dead he sinks there on his flag; and will never fight more," (Carlyle). But his troops, mad with grief and rage, storm the position and win the battle.

The evening after the battle of Chancellorsville, General Lee wrote to Jackson a note which should be classed among the masterpieces of literature:

General,

I have just received your note, informing me that you are wounded. I cannot express my regret at the occurrence. Could I have directed

events, I should have chosen for the good of the country to be disabled in your stead.

I congratulate you upon the victory, which is due to your skill and energy.

Very respectfully, your obedient servant,

R. E. LEE, GENERAL.

When this note was read to the wounded general, he said very quietly, "General Lee is very kind, but he should give the praise to God."

A few days after the battle between the *Monitor* and the *Merrimac,* Lincoln was attending a cabinet meeting; during the meeting someone remarked that Lieutenant Worden, the commanding officer of the *Monitor,* was in the city, badly wounded. Without waiting for the end of the important meeting, the President arose, saying, "Excuse me, gentlemen, I must see this fellow." He went immediately to the house at which the wounded officer was being cared for. As Lincoln entered the room, Worden was lying on a sofa; his eyes were bandaged, and his face bruised and bloody as the result of the terrible wound he had received when a shell exploded against the armor of the conning tower within a foot of the slit through which he was looking.

As the President took his hand, the wounded hero said: "Mr. President, you do me great honor by this visit." "Sir," answered Mr. Lincoln, as the tears ran down his face, "I am the one who is honored in this interview."

During the World War there was no important action which was not illustrated by some acts of heroism which have fortunately been preserved for us. At Coronel, Cradock headed in with his flagship toward the German line in order to try to save the other British ships. The *Monmouth* refused to surrender even when the ship had such a list that none of her battery could be brought to bear, and went down with colors flying when sunk by the *Nürnberg.* The heroism of the *Monmouth's* captain was more remarkable in view of the fact that the sea was so rough that it was evident that should the ship go down it would not be possible to save a single man of the crew.

In the Battle of the Falkland Islands, Von Spee went down fighting his flagship with the utmost heroism, not a man on the *Scharnhorst* being saved. When the *Gneisenau* was sinking and all guns were silent, the captain sent an officer around the

ship with orders to try to fire a few more rounds. It was found possible to load one gun which was pointed so high in the air that there was no possibility of making a hit with it; nevertheless, it was fired once, whereupon the British re-opened fire and soon sent the gallant *Gneisenau* down. The conduct of the *Nürnberg* and *Leipzig* was also perfect.

In the Heligoland Bight action the *Mainz* and *Köln* fought, entirely without support, a whole battle-cruiser squadron at short range. At the Dogger Bank the *Blucher* received the fire of all the British battle cruisers and was fought to the end.

At Jutland the British destroyers *Nestor, Nicator, Nomad, Moorsom, Onslow,* and *Shark,* with many others, fired torpedoes at enemy capital ships at almost point-blank range, in some cases when they were themselves sinking. A few dying men from the destroyer leader *Tipperary,* while floating on a Carley raft, were made known to their friends by the song, "It's a long way to Tipperary," which they were manfully singing.

On the German side the defense of the *Wiesbaden* and the superb gallantry with which Admiral Hipper led the battle cruisers will be remembered as long as history exists.

The British cruiser *Warrior* had been badly damaged in the day action, and the next morning was in a sinking condition. The captain of the seaplane carrier *Engadine* took his ship alongside in a very heavy sea, so that the ships pounded against each other badly. The men of the *Warrior* commenced to pass over to the *Engadine.* "At this moment," writes an officer of the *Engadine,* "the captain considered that there was too much haste, and he ordered the bugle 'Still' to be sounded. The result was wonderful. Not a single man passed from the *Warrior* to the *Engadine* after the bugle was sounded, but every man fell back from the ship's side against the funnel casing, just as they would have done if the bugle call had been sounded at drill. It was a wonderful sight; a triumph of organization, discipline, and courage combined."

On of the bravest things of the war was the attempt of a German submarine manned entirely by officers to enter Scapa Flow during the last months of the war. The submarine, of course, was blown up by a mine, and the exploit had no effect other than to demonstrate the fact that, even when the Germans

had definitely lost the war, their officers knew how to die. This, after all, is by no means an unimportant result of such a small undertaking.

The blocking of Zeebrugge has fortunately been described in detail and has rightly won the admiration of the world. It is a distinct loss to our service that we were not permitted to make a similar attempt. Whether it would have succeeded or failed would have made no difference.

(To be continued)

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TEMPORARY VERSUS PERMANENT DETAIL OF SPECIALISTS: EXPERIENCE OF ARMY ORDNANCE DEPARTMENT

LIEUTENANT (j. g.) R. E. BASSLER, (CEC), U. S. N.

The material contained in this article has been taken from the various appropriation bills and reorganization acts affecting the War Department. Only data bearing on the question of temporary versus permanent detail have been included. The purpose of the article is to present in a concrete form the experience of another government department sometimes cited in support of amalgamation.

The history of the Army Ordnance Department (or corps, depending on wording in particular bill) is interesting when considering amalgamation. There is to be found in this brief history an example which is as nearly analogous to the Navy's problem as can be cited.

In articles on the amalgamation question, proponents or opponents very rarely define the scope of the amalgamation under discussion; also there is a considerable lack of unanimity of opinion among proponents as to what corps should be included. The history contained herein may therefore be of benefit to the Navy by nullifying certain arguments that have been advanced as to the extent of amalgamation and its completeness, and by showing some of the alleged advantages to be chimerical.

The conclusions derived by the author are entirely unofficial and uninspired, and it has been his endeavor to arrive at correct and unbiased deductions. We should not hesitate to profit by the experience of another branch of the service especially since conditions are somewhat analogous. A wise man makes mistakes but never makes the same one twice.

The line of the Army may be considered as the Infantry, Cavalry, and Artillery services. Army regulations include in the line other combatant branches which, however, are really corps, such as the Air Service, since personnel is not supplied by detailing officers temporarily, but by permanent detail. The Army Ordnance Department supplies the line and other services with ordnance equipment. During the Revolution these duties were vested in a Purveyor of Supplies, which office ceased to exist at the close of the war. The office of Purveyor of Supplies was recreated on the recommendation of President Washington in 1795. This office was abolished in 1812, and in its stead an Ordnance Department was created.

From 1821 to 1832 its officer personnel was obtained by the detail system, that is, officers were assigned to the Ordnance service from the Artillery and functioned directly under the Secretary of War. In 1832 the Department was re-established, the President selecting the officers from the line (as considered above) who comprised the corps initially. In 1861 the Department was greatly enlarged, and its chief given the rank of Brigadier General, and it was expanded further in 1863. In the reorganization of 1901, following the Spanish-American War, the system of permanently commissioning officers in the Ordnance Department was abolished, and the detail system again supplied the personnel. Under the terms of the Reorganization Act, of 1901, line officers, except in the higher grades, were detailed for four years with the Ordnance Department and then they had to have two years of line duty before being again eligible for such detail.

These assignments to the Ordnance Department proved to be very unpopular with line officers for two reasons: First, the examinations for initial detail to the Ordnance Department were very severe, and second, officers were examined for promotion in their permanent branch of the service at any stage of their tour of duty in the Ordnance Department. They therefore had to study a second specialty in order to gain entrance into the Ordnance Department, and while serving in that Department, they had to keep abreast of the progress being made in their own particular line specialty.

Consequently the line officers did not attempt to qualify themselves for the Ordnance Department, and that Department soon

began to suffer from lack of interest on the part of the line. The law requiring officers to have two years of line duty before being again eligible for detail to the Ordnance Department was modified to one year, and finally the one-year clause was eliminated in special cases, which of course kept officers continuously out of their specialty and in the Ordnance Department. Special legislation was therefore required to correct the apathy existing on the part of the line officer for duty in the Ordnance Department, and it is at this point that the case parallels the difficulty with our own Bureau of Engineering, in that special legislation was needed in 1916 to provide designing engineers. In 1906, therefore, a law was passed stating that details to ordnance duty could be made from the line, from the grade in which the vacancy existed, or below. The lack of interest on the part of the line was to be overcome by granting officers detailed to Ordnance duty a temporary promotion. Needless to say, the majority of vacancies in the Ordnance Corps, particularly in the grades of Major and Captain, were filled by line officers in the grades of Captain and First Lieutenant, respectively. This inducement somewhat lessened the apathy of the line officer for ordnance assignment, and the Ordnance Department once more had officers sufficient for their requirements. It is interesting to note that upon our entrance into the World War detailing officers into the Ordnance Department immediately ceased, and the officers in that Department were continued in their assignments. In the reorganization which followed the World War, an Ordnance Corps was again established in the Army, which would seem to indicate that the system of detailing officers temporarily to the Ordnance Department had been tried and found wanting.

I believe it is reasonable to draw the following conclusions from the above history.

(1) The efficient line officer will shy at duties which remove him from his profession and hurt his chances of promotion. If he is at all interested in his particular specialty and anxious to make a success of it, he will of necessity neglect his part-time specialty, regarding it as an assignment to be passed through as quickly and easily as possible. He will regard the details of this assignment as something over which little time is to be wasted.

(2) To make the detail system function properly, there must be an inducement offered in one form or another, whether it be higher rank in the Army Ordnance case, or engineering duty only in the Naval Engineering example. The fear that an assignment to another specialty will decrease his chances of selection up must be removed.

(3) In time of war the detailing system was immediately abolished because of its inefficiencies, and the absolute necessity of retaining the personnel the Department happened to have, at that particular time.

(4) The officer personnel under the corps system, in cases of emergency, are a more competent body of men, more capable of immediate expansion, and have better *esprit de corps* than a similar body of officers under temporary detail system. For instance, under the temporary detail system at the outbreak of the war, we find the Department composed of officers, the majority of whom are in their first tour of duty and can be hardly called specialists. Others may be in a second assignment, and probably very few of them will have more than two assignments. Furthermore, under the temporary detail system, the type of knowledge stored away in an officer's brain is entirely different from that which he would attempt to remember were his temporary detail his permanent specialty. In cases of emergency under the corps system, there is a body of specialists whose capabilities are known to the Chief of the Corps, and whose assignments can be intelligently made. This same body of men are eager to hold up their end of the prosecution of a war because of their pride in the organization of which they are and always will be members.

(5) The system of detailing line officers to ordnance duty was absolutely wasteful and uneconomical, for the history of the detail system is replete with examples similar to the following: Wherein line officers trained in Infantry, Artillery or Cavalry filled positions such as Superintendent of Factory, Machine Shop, Testing Shop, Paint Shop, Powder Expert, etc. The line officers were not experienced sufficiently to assume these duties and discharge them efficiently. As soon as they became familiar and efficient in their duties, their tour of duty ended and they were returned to their specialties in the line.

(6) The line officers' assignments in ordnance neither improved the quality nor quantity of ordnance equipment, nor did it improve their qualifications for the line.

(7) Enlisted men in the Army (as in the Navy) rarely change their specialty, and the Ordnance Department always has had its enlisted men for ordnance duty only. It is obvious that should enlisted men be switched from specialty to specialty, more or less confusion would reign due to the fact that there would be no organization to carry on.

(8) An officer cannot become a specialist under the temporary detail system. In other words, a "so-called" specialist under the detail system is not as efficient, capable, etc., as the specialist obtained under the corps of permanent assignment system.

(9) Any proposed amalgamation, therefore, which has for its object the tempororay detail of line officers to specialist duties, is unsound. The experience outlined in the above brief at least shows this conclusion warrantable in the case of the Ordnance Department, and it is believed that the instance cited is as nearly analogous to our own general problem as can be obtained.

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LIFE INSURANCE AS APPLIED TO THE NAVAL SERVICE

By Edward L. Webb

Having become a life insurance solicitor in February, 1921, and having spent the last six months practically altogether in soliciting naval officers, the author has written the following article with the view of showing naval officers how mortality in the Naval Service compares with that of civilians, with a few suggestions as to which is the best type of insurance and the reasons therefor.

Let us start with the American table of mortality which practically all companies and the U. S. Government use. Table I is made up from experience gained on insurable lives.

Now in working out Table II, which follows, I have applied Table I to each class of the U. S. Naval Academy beginning with the class of 1860, and ending with the class of 1916. In doing this, my data was taken from the U. S. Naval Academy Graduates Association's *Register* as of January 1921, which shows the members who are living; those who are dead; and those who are unaccounted for. The members "unaccounted for" have not been considered, and it was assumed that age upon graduation was 22.

A general summary of Table II shows that mortality varies widely between classes and that the per cent of actual mortality to expected mortality in some cases is exceedingly high with a general average of 95.8 per cent.

We will now compare this with the experience of ten of the larger insurance companies on civilian lives over the period of 1917-21 inclusive.

TABLE I

AMERICAN TABLE OF MORTALITY

Age	*Number Surviving*	*Deaths in The Year Following*	*Death Rate per 1,000*	*Expectation in Years*
10	100000	749	7.49	48.72
11	99251	746	7.52	48.08
12	98505	743	7.54	47.45
13	97762	740	7.57	46.80
14	97022	737	7.60	46.16
15	96285	735	7.63	45.50
16	95550	732	7.66	44.85
17	94818	729	7.69	44.19
18	94089	727	7.73	43.53
19	93362	725	7.77	42.87
20	92637	723	7.81	42.20
21	91914	722	7.86	41.53
22	91192	721	7.91	40.85
23	90471	720	7.96	40.17
24	89751	719	8.01	39.49
25	89032	718	8.07	38.81
26	88314	718	8.13	38.12
27	87596	718	8.20	37.43
28	86878	718	8.26	36.73
29	86160	719	8.35	36.03
30	85441	720	8.43	35.33
31	84721	721	8.51	34.63
32	84000	723	8.61	33.92
33	83277	726	8.72	33.21
34	82551	729	8.83	32.50
35	81822	732	8.95	31.78
36	81090	737	9.09	31.07
37	80353	742	9.23	30.35
38	79611	749	9.41	29.62
39	78862	756	9.59	28.90
40	78106	765	9.79	28.18
41	77341	774	10.01	27.45
42	76567	785	10.25	26.72
43	75782	797	10.52	26.00
44	74985	812	10.83	25.27
45	74173	828	11.16	24.54
46	73345	848	11.56	23.81
47	72497	870	12.00	23.08
48	71627	896	12.51	22.36
49	70731	927	13.11	21.63

TABLE I Continued

AMERICAN TABLE OF MORTALITY

Age	*Number Surviving*	*Deaths in The Year Following*	*Death Rate per 1,000*	*Expectation in Years*
50	69804	962	13.78	20.91
51	68842	1001	14.54	20.20
52	67841	1044	15.39	19.49
53	69797	1091	16.33	18.79
54	65706	1143	17.40	18.09
55	64563	1199	18.57	17.40
56	63364	1260	19.89	16.72
57	62104	1325	21.34	16.05
58	60779	1394	22.94	15.39
59	59385	1468	24.72	14.74
60	57917	1546	26.69	14.10
61	56371	1628	28.88	13.47
62	54743	1713	31.29	12.86
63	53030	1800	33.94	12.26
64	51230	1889	36.87	11.67
65	49341	1980	40.13	11.10
66	47361	2070	43.71	10.54
67	45291	2158	47.65	10.00
68	43133	2243	52.00	9.47
69	40890	2321	56.76	8.97
70	38569	2391	61.99	8.48
71	36178	2448	67.67	8.00
72	33730	2487	73.73	7.55
73	31243	2505	80.18	7.11
74	28738	2501	87.03	6.68
75	26237	2476	94.37	6.27
76	23761	2431	102.31	5.88
77	21330	2369	111.06	5.49
78	18961	2291	120.83	5.11
79	16670	2196	131.73	4.74
80	14474	2191	144.57	4.39
81	12383	1964	158.61	4.05
82	10419	1816	174.30	3.71
83	8603	1648	191.56	3.39
84	6955	1470	211.36	3.08
85	5485	1292	235.55	2.77
86	4193	1114	265.68	2.47
87	3079	933	303.02	2.18
88	2146	744	346.69	1.91
89	1402	555	395.86	1.66
90	847	385	454.55	1.42
91	462	246	532.47	1.19
92	216	137	634.26	.98
93	79	58	734.18	.80
94	21	18	857.14	.64
95	3	3	1000.00	.50

TABLE II

Class of	Avge. Age 1921	No. Members	No. Accounted for by Ass'n Register	No. living in January 1921	No. dead in January 1921	Expectation of living members	Expectation of dead members	%-Expectation of deaths	%-Actual to Expected Deaths
1860	83	25	25	4	21	2.4	22.6	90.5	92.9
61	82	27	27	2	25	2.8	24.2	89.6	103.3
62	81	32	31	5	26	4.2	26.8	86.4	97.0
63	80	55	52	3	49	8.3	43.7	84.1	112.1
64	79	50	50	14	36	9.2	40.8	81.7	88.2
65	78	85	80	14	66	16.6	63.4	79.2	104.1
66	77	73	68	15	53	15.9	52.1	76.6	101.7
67	76	87	83	20	63	21.7	61.3	73.9	102.7
68	75	99	94	29	65	27.1	66.9	71.2	97.1
69	74	74	72	21	51	22.8	49.2	68.4	103.6
70	73	68	68	18	50	23.3	44.7	65.7	111.8
71	72	49	46	11	35	17.0	29.0	63.0	120.6
72	71	25	25	5	20	9.9	15.1	60.3	132.4
73	70	34	34	16	18	14.4	19.6	57.7	91.8
74	69	40	38	17	21	17.1	20.9	55.1	100.4
75	68	48	48	19	29	22.7	25.3	52.7	104.6
76	67	45	45	22	23	22.4	22.6	50.3	101.7
77	66	45	44	23	21	22.9	21.1	48.0	99.5
78	65	50	48	31	17	26.0	22.0	45.9	77.2
79	64	64	64	29	35	36.0	28.0	43.8	125.0
80	63	79	71	31	40	41.3	29.7	41.8	134.7
81	62	96	96	56	40	57.6	38.4	40.0	104.1
82	61	60	59	40	19	36.5	22.5	38.2	84.4
83	60	54	53	31	22	33.7	19.3	36.5	114.0
84	59	46	46	31	15	30.0	16.0	35.0	93.7
85	58	36	35	26	9	16.7	18.3	33.3	49.1
86	57	25	23	14	9	15.7	7.3	31.9	123.2
87	56	44	43	25	18	29.9	13.1	30.6	137.4
88	55	35	35	24	11	24.8	10.2	29.2	107.8
89	54	35	35	28	7	25.2	9.8	28.0	71.4
90	53	34	34	30	4	25.0	9.0	26.7	44.4
91	52	46	45	40	5	33.5	11.5	25.5	43.4
92	51	40	40	31	9	30.2	9.8	24.5	91.8
93	50	44	43	29	14	33.0	10.0	23.4	140.0
94	49	47	45	38	7	35.0	10.0	22.4	70.0
95	48	41	38	31	7	29.9	8.1	21.4	86.4
96	47	38	38	34	4	30.2	7.8	20.5	51.2
97	46	47	46	39	7	37.0	9.0	19.5	77.7
98	45	39	39	34	5	31.7	7.3	18.6	68.5
99	44	53	53	49	4	44.3	8.7	17.7	45.9
1900	43	61	58	52	6	48.0	10.0	16.9	60.0
01	42	67	66	58	8	55.4	10.6	16.0	75.4
02	41	59	59	54	5	50.0	9.0	15.2	55.5
03	40	50	49	45	4	42.0	7.0	14.3	57.1
04	39	62	58	52	6	50.2	7.8	13.5	76.9
05	38	114	110	102	8	96.0	14.0	12.7	57.1
06	37	116	114	107	7	100.4	13.6	11.9	51.4

TABLE II Continued

Class of	Avge. Age 1921	No. Members	No. Accounted for by Ass'n Register	No. living in January 1921	No. dead in January 1921	Expectation of living members	Expectation of dead members	%-Expectation of deaths	%-Actual to Expected Deaths
1907	36	209	205	186	19	182.2	22.8	11.1	83.3
08	35	201	193	184	9	172.2	20.8	10.3	43.2
09	34	174	165	153	12	149.5	15.5	9.4	77.4
10	33	131	128	121	7	117.0	11.0	8.6	63.6
11	32	193	188	173	15	173.1	14.9	7.9	100.6
12	31	156	150	146	4	139.5	10.5	7.0	38.1
13	30	139	138	133	5	129.3	8.7	6.3	57.4
14	29	154	151	144	7	142.7	8.3	5.5	84.3
15	28	179	179	166	13	170.6	8.4	4.7	54.7
16	27	177	176	172	4	169.2	6.8	3.9	58.8
		4256	4146	3027	1119	2971.2	1174.8		95.8

A summary of Table III shows civilian mortality rather uniform between companies; that it fluctuates from year to year and very widely in 1918 which was caused principally by the epidemic of influenza. However, the actual to expected mortality is 68 per cent over the period of five years for the ten companies.

A comparison of Tables II and III shows service mortality to

TABLE III*

Per cent Actual Deaths to Expected Deaths of Ten Companies for 1917-21 inclusive

	1921	1920	1919	1918	1917
Metropolitan	49.10	56.74	72.65	105.58	64.18
New York Life	56.20	68.80	78.60	94.60	71.00
Equitable	52.89	61.51	71.25	101.78	70.97
Prudential	49.37	59.90	68.48	110.01	61.00
Mutual Life	56.45	66.74	63.03	95.73	71.66
Northwestern	47.72	54.55	57.09	78.12	54.23
Mutual Benefit	48.69	52.23	60.75	86.67	51.35
Penn Mutual	53.10	70.10	68.40	105.25	64.75
Travelers	50.56	53.81	56.69	98.17	54.30
Aetna	54.65	66.28	66.00	99.61	69.37
Average	51.87	61.07	66.29	97.55	63.28

*Taken from *Flitcraft's Compend*, 1922 Edition.
General Average 68 per cent.

be 27 per cent higher than civilian mortality. Hence that is the reason why the majority of companies "rate up" naval officers $5.00 per $1,000, or 5 years in age. Those that do offer you insurance at the same rate as civilians, limit you in amount to about one-tenth allowed an individual civilian.

The thought will occur to some that as actual mortality is only 68 per cent of expected, life insurance companies are making considerable money. That assumption is erroneous in the case of Mutual Companies, (and the majority are mutual to-day) for surplus earnings are refunded to policy-holders in an annual dividend.

Three factors govern the dividend:

(1) Savings on mortality,
(2) Savings on expenses of operation,
(3) Excess earnings on investments.

The latter two do not vary much but in the case of the first, it does as shown in Table III. For instance, the large losses in 1918 due to "flu" caused a reduction in dividend later on for a period of one year by most companies.

In the case of Stock Companies, these surplus earnings go to the stockholders. In other words, they issue non-participating contracts in which you waive all your right to share in the savings from mortality, expense and interest.

The general deductions to be made from Tables I, II and III are:

(1) The need of Life Insurance is greater in the service than in civilian life.
(2) A life insurance policy (not rated up) is a better proposition for a naval officer than a civilian. In other words, the officer gets more for his money.

BEST TYPE OF POLICY

In discussing the best type of policies offered, it should be borne in mind that the primary function of Life Insurance is what is called "protection." There are numerous secondary functions but "protection" is its biggest asset. Therefore, the best policy is the one that carries the lowest premium and that one is the Straight Life policy.

Below are a few types arranged in order of preference. Figures are at age 25 per $1,000. per year, quoted by a mutual company.

Straight Life	$18.28
30-Payment Life	$21.50
Endowment at 60	24.64
20-Payment Life	26.48
30-Year Endowment	28.74
20-Year Endowment	44.84

Dividends will reduce above figures in later years, generally beginning at the end of second year.

The average life of a man 25 is 38.8 years. Therefore, when insured on Straight Life plan, we assume he will make 38.8 payments of $18.28 or $709.26 per $1,000, (reduced by future surplus earnings). Suppose he lives 38.8 years or to retirement age. He can then stop his payments and have a paid-up policy of $820 for each $1,000 face value. In fact he has a paid-up value option beginning the end of third year and increasing each year thereafter, and that paid-up value is in proportion to and always greater than the amount paid in.

Table II shows about 56.2 per cent each class should reach retirement age, excluding resignations, retirements, etc. Those that are fortunate enough to reach age 64 can stop payments and exercise above option; those that do not reach age 64 leave their estate better off by taking the Straight Life policy.

The 30-Payment Life plan is the next best, but it increases your protection costs by one-sixth.

The Endowment at 60 has the secondary function of providing a lump sum available about the time you retire. Is not your retired pay when you retire on account of age ample to take care of you and a fair size family? Therefore, that function is secondary and depends upon individual circumstances.

The 20-Payment Life comes next with a premium nearly 50 per cent higher than Straight Life.

The 20-Year and 30-Year Endowment provides the means for accumulating a sum for use at some remote date but the risk to the Company is lessened considerably owing to the large premium required to be charged to pay you in case you are living at the maturity of the policy.

Past experience shows that when a man 25 matures a 20-Year Endowment at 45, he usually renews his insurance on the Straight Life plan at age 45, which then will carry a premium of about $35 per $1,000. It would have been better had he taken Straight Life Insurance at 25 and invested the difference in premium in a saving fund.

A majority of older officers realize that Straight Life insurance is the best, but younger ones do not. It is to the agent's interest to sell you an Endowment or limited payment life policy in preference to Straight Life, but it is to your interest to buy the Straight Life whether married or single. The sale can frequently be made more easily on the first two than the last.

Another feature of Life Insurance policies that draws attention is the Disability Clause they now contain. Many sales have been made on this feature alone. It is well to include the provision in your policy for the cost is small, about $.65 per $1,000 per year at age 25, but it is a minor part of the contract. Average life after total and permanent disability is about 3 years.

Let us now discuss the biggest and best features of a Life Insurance contract and these are the various settlement options. What are called the non-forfeiture provisions such as Cash Values, Paid-Up Values and Extension, protect you, but the settlement options protect your beneficiary and that is your main object when buying a Life Insurance policy.

One is usually very eager to leave his insurance to his beneficiary in a lump sum. It is a mistake to do so. It is the equivalent of having $10,000 worth of Liberty Bonds, knowing you were going to die, then advising your beneficiary to sell them and invest the proceeds to the best of her or his ability. How many would do that? Not many. Your beneficiary is accustomed to receiving a monthly allotment from the Navy Department. Your insurance should be made payable in the same way.

Experience shows that the average beneficiary soon dissipates a "lump sum" by poor investments. It requires financial skill to invest a sum of money safely over a period of years. Life Insurance companies are equipped to do that better than your beneficiary. Furthermore, the income is guaranteed—more than a trust company will do when executing an estate. By guaranteed, I mean backed by the assets of the company, which in the larger ones approximate closely to a billion dollars each. The proceeds

of your policy earn in general 4½ per cent interest while being paid off. It is far better to leave a sufficient monthly income for five or ten years than leave it in a lump sum. It can be made guaranteed for your beneficiary's life time. Any arrangement can be made to suit the most exacting situation.

In summing up, a great many officers can change their present types of policies to better ones that will react to their advantage. By that I do not mean giving up a policy to take one in another company, for that is a losing proposition, but I mean from one plan to a better plan in the same company.

A great many should change their method of settlement, converting all their present policies to a monthly income basis, or a small lump sum and balance on monthly income. That will react to the advantage of their beneficiary.

Many are inadequately insured and some do not carry any insurance. A reflection on service mortality, Table II, shows clearly the imperative need of it in the service. For when one does not insure he asks his beneficiary to take a chance on one single life that a company could not do, which is clearly shown in Table II—the wide fluctuations between classes. This is more pronounced when considered as an individual proposition.

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U. S. NAVAL INSTITUTE, ANNAPOLIS, MD.

HINTS ON TACTICAL MANEUVERS

By Lieutenant Commander Jules James, U. S. Navy

1. On making a careful analysis of maneuvers it is realized that the big problem, pervading the entire system, is that of losing bearing with reference to a guide unit. With this well in hand a maximum of time and attention can be given to other details.

2. Most of the following notes and tables were prepared to furnish a systematic solution of this problem so that it could be handled without confusion, and with least effort. They are the result of several years of practical experience with tactical exercises in the fleet, and it is not known where anything to take their place can be found. It is hoped that they will be of use to the service at large.

3. Generally considered, in maneuvers, the prompt attainment of the bearing is more important than the prompt attainment of the distance. Effort to reach both as quickly as possible should be made, but if the bearing is attained promptly it is rather a simple matter to ease in or out to the proper distance. Also, the amount of distance usually lost seldom interferes with a maneuver that is to follow immediately.

Tables

4. Tables "A" (Figure 1) were constructed from data obtained by taking actual observations of *degrees (in bearing of the guide) lost in making turns of various amounts.* From the observations taken a complete set of curves was constructed, and the tables were taken from these curves. Either the curves or the tables can be used, but the latter were found to be more convenient for use on the bridge.

TABLES OF DEGREES OF BEARING

LOST IN TURNING

	Distance from Guide	Degrees Turn							
		20	30	40	50	6	70	80	90
12 Knots	1700	3	5	7	9	12	15	17	21
	3400	1½	2½	3½	4½	6	7½	8½	10½
	4000	1	2	3	4	5	6½	7½	9
	5000	1	2	2	3	4	5	6	7
	6000	½	1½	2	2½	3½	4½	5	6

	Distance from Guide	Degrees Turn							
		20	30	40	50	60	70	80	90
15 Knots	1700	7	10	13	17	20	24	27	30
	3400	3½	5	6½	8½	10	12	13	15
	4000	3	4½	6	8	8½	10	11	13
	5000	2	3	4	6	7	8	9	10
	6000	1½	2½	3	5	6	7	7	8

Fig. 1 (Tables A)

5. In studying and executing these turns, the surprising thing that is brought to light is the large loss in bearing resulting from a turn at high speed, as compared with the loss resulting from the same turn at a low speed. Only by using data such as is furnished here can bearings be obtained with certainty under various conditions of speed, and of distance from the guide.

6. In turning, a ship on the quarter of the guide of course loses fewer degrees in bearing during the turn, and in settling

down, than does one on the beam. She loses the same number of yards astern of the point at which she begins the turn, but it was found easier to work with degrees of bearing lost than with yards lost. Consequently, degrees were embodied in the tables. They represent the losses for average position, or bearing, relative to the guide. They will be found sufficiently accurate and extremely useful.

7. To explain the use of these tables:

(See Figure 2.) Suppose that from a position 1,700 yards 30° on the starboard bow of the guide you are to steam out at 60° from the base course, speed 15 knots, to take position at the same distance 60° on the starboard bow of the guide. (If convenient see second figure on page 35 of the publication familiarly known as standing order No. 2.)

8. In actual practice the procedure is as follows:

The 15-knot table shows that at a distance of 1,700 yards from the pivot, you will lose 20° in making a 60° turn. Therefore, you are to resume the base course when 20° ahead of the bearing on which you are to form.

FIG. 2

Suppose the course of the guide is 10° (psc).

You wish to take position bearing 70° (psc) from the guide, which means that the guide is to bear from you 250° (psc).

When you start from your initial position the guide bears 220°. As you steam out towards your new position, this bearing gradually increases. When it reaches 230° execute

B

Distance from Track of Guide to Turn	
Degrees Turn	Dist. from Guide
10	50
15	80
20	100
30	170
40	260
45	315
50	360
60	450
70	550
75	600
80	650
90	740
100	815
110	900
120	950

C

Table of Sines	
Angle	Sine
10	1/6
15	1/4
20	1/3
30	1/2
45	7-10
60	7/8

D

Distance Per Min. Steamed	
Knots	Yards
1	33.3
2	66.6
3	100
4	133
5	166
6	200
7	233
8	266
9	300
10	333
11	366
12	400
13	433
14	466
15	500
16	533
17	566
18	600
19	633
20	666
21	700

Fig. 3 (Tables B, C, and D

the turn to resume base course. You will lose 20° in the turn and end up with the guide bearing 250° (psc).

If you are taking position 3,400 yards distant, and using the same speed, the table shows that for the same turn you will lose 10°; 4,000 yards distant, 8½, etc.

9. The results obtained from the use of these tables have been most satisfactory. Reference to them eliminates the usually disastrous guesswork, and results in a great saving of time, coal, and effort. They are constructed for the same speeds of guide and maneuvering unit, which is the general case.

10. For different speeds of guide and maneuvering unit additional tables can be constructed, but it is not considered that this is desirable as the same speeds generally are used, and these tables will greatly assist in judging all cases, whether the same or different speeds are used.

11. Table "B," Figure 3, is very useful for turning astern of the guide. It shows how many yards from the *track* of the guide to execute the turn, in order that you may follow astern. Its use is as follows:

(a) Lay off the astern track of the guide (which occupies the center of the mooring board.)

(b) Lay off a line parallel to this track, and at a distance from it equal to the distance given by Table "B" for the turn you are to make. As you approach this line, plot your positions as given by range finder and compass, and when your plot falls on the line, execute the turn.

12. This will put you in correct position astern of the guide, and the division ahead having turned inside or outside will not mislead you.

13. Table "C" is simply a table of sines; Table "D," a table of yards steamed per minute at different speeds.

14. Their uses are illustrated in the same problem, as follows:

Say you wish to gain 1,000 yards towards the flank. If you change your course 10°, the sine of which is 1/6, steam 6,000 yards, then return to the course.

Table "D," which needs no explanation, aids you in determining how long it takes to steam this distance.

Should you change course 30° instead of 10°, steam twice as many yards as you wish to gain towards the flank. This because the sine of 30°, as shown by the table, is 1/2.

15. It may appear that the range finder is all that is necessary for this problem, but in actual practice it often happens that as soon as you turn out the range finder in use will not bear, in which case the tables are invaluable.

MOORING BOARD

16. The extremely simple method of the mooring board originated by Rear Admiral Burrage, and described below, is especially recommended for use during maneuvers. All who are interested in the mooring board, or who expect to become so at a future date, might well try it out and save this article for future reference.

17. It is believed that the Navy in general is not familiar with this method, which can be used with great ease in any mooring-board problem. Officers, especially navigators, now using other methods, might well investigate this one and consider using it in the future. It is as follows:

Knowing speed and course of guide and the point you wish to reach:

Place the parallel ruler (or the arm of the Universal Drawing Instrument) through the point you now occupy (obtained by compass bearings, and range finder or stadimeter reading) and the point you want to reach. (These may be any two points on the mooring board.)

Slide the ruler (or arm) to the point ahead of the guide representing his course and speed and draw a line.

Now, the point where this line cuts the circle representing the speed you are going to use indicates the course you are to steer.

18. As the course to be taken depends on the speed to be used, you have a number of combinations of speed and course from which to choose.

19. To illustrate, see Figure 4.

Guide at *C* making 12 knots, steering 60°.

Range finder and compass bearing show you to be at *A*.

You wish to reach *B*, 2,000 yards astern of the guide. (Scale 1″=1,000 yards.)

MOORING AND MANEUVERING BOARD

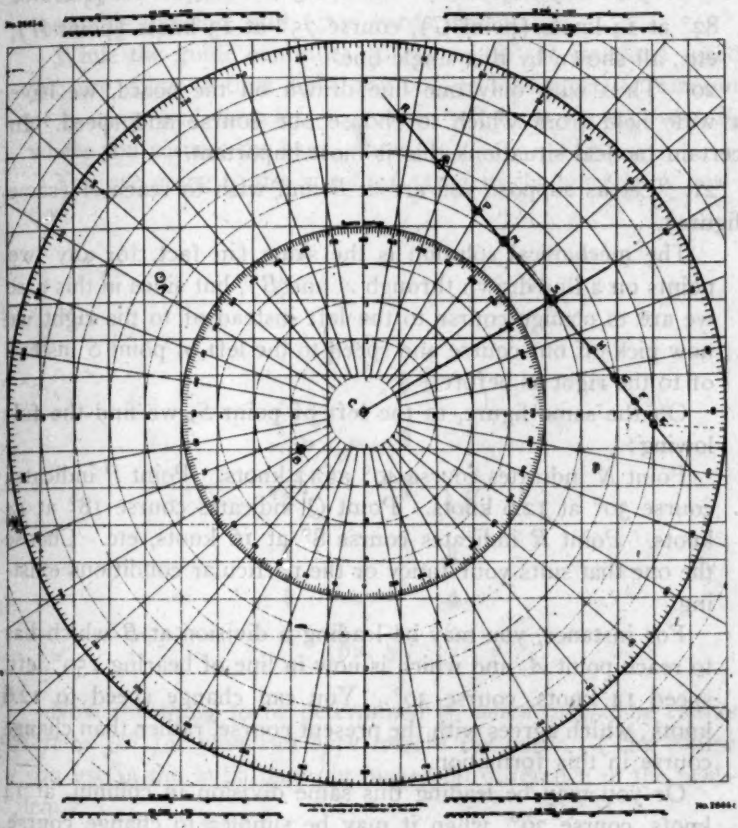

FIG. 4

Your maximum available speed is 16 knots.

Mark the point *S*, which represents the course and speed of the guide (60° being the course of the guide and 12 knots his speed, speed scale doubled. Circles represent speed. Speed scale is arbitrary and independent of distance scale.)

Place the parallel rulers through *A* and *B* (*where you are and where you want to go.)*

Slide the ruler up to pass through point *S*, and draw a line.

This line cuts the 16 knot circle at the point *E*, which, projected radially on the outer degree circle, represents the course you are to take, (92-1/2°), if you want to use 16 knots.

Or you may use course 88° at 15 knots (point *F*), course 82° at 14 knots (point *G*), course 75° at 13 knots (point *H*), etc., all shown by this single line.

20. Thus with only one line drawn on the board, we have a wide field from which to choose our course and speed. In certain tactical situations this is most important.

21. Let us suppose you are at *B* and wish to reach *A* (same figure).

The mechanical solution is the same (in fact, for any two points on a line drawn through *A* and *B*), but since in this case we are to change course to the left instead of to the right we now pick off our course and speed to the left of point *S* instead of to the right as before.

On the same figure, to the left of point *S*, we find the following:

Point *N* indicates course 40° at 12 knots. Point *P* indicates course 30° at 12.6 knots. Point *Q* indicates course 18° at 14 knots. Point *R* indicates course 8° at 16 knots, etc. Choose the one that suits your fancy or the particular conditions existing.

For instance, you may be leading a division at *B* which has to reach point *A*, and which is now in line of bearing 150° left, speed 14 knots, course 30°. You can change speed to 12.6 knots, which agrees with the present course, rather than change course in this formation.

Or you may be leading this same division in column, at 14 knots, course 30°, when it may be simpler to change course, without signal, 12° to the left to course 18° rather than to change speed.

22. In some cases it will be found that the line cuts certain speed circles twice, in which cases for a certain speed you will have two courses from which to choose the most suitable.

23. Described below is a modification or reversal of this method, often used in maneuvers:

Suppose you are in command of a division of a fleet on course 60°, and maneuvering at 12 knots. You now occupy a position, *F*, Figure 5, 1,700 yards 45° on the starboard bow of the guide division. (If convenient see bottom figure on page 38 of Standing Order No. 2, for this problem.)

Suppose further that you are to take a position *B*, abeam of the guide division, and 1,700 yards distant.

While the guide continues on course 60° at standard speed you are going to turn right, say 60°, to lose a certain amount of bearing, *and then left to course* 30° *to arrive at point B*, where you resume the base course.

You are going to use *standard speed* in changing your position.

FIG. 5

Now the thing to be determined is, *when to change course left to 30° for your run back toward the guide.* (The course you use in the initial run out makes no difference in the problem.)

24. This problem is of frequent occurrence and has been considered difficult to execute. The solution below is extremely simple and accurate, while the "time method" solution has been found to be most unsatisfactory.

25. See Figure 6.

You are at point *F*, and wish to go to point *B*.

The speed of the guide division is standard, which is 12 knots, the course of the guide 60°. This gives us the point *S* (speed scale doubled).

26. The mooring board operator is principally concerned with the fact that, after your initial run out, *you are going to run in on course* 30° *with standard speed (12° knots).*

MOORING AND MANEUVERING BOARD

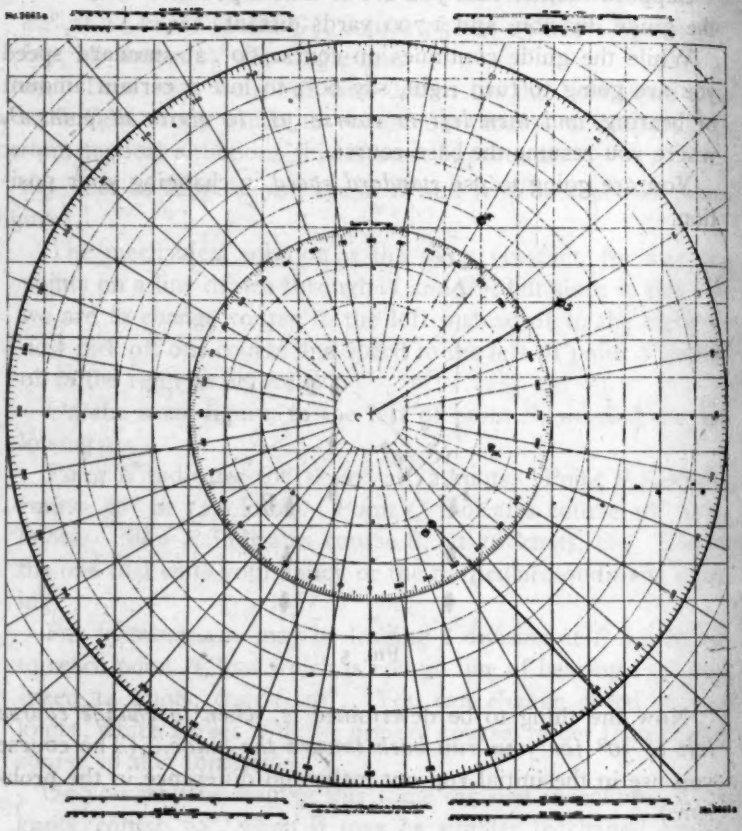

FIG. 6

He already has marked on the board:

(a) Point *C*, at the center of the board representing the guide.

(b) Point *S* representing the course and speed of the guide.

He now marks point *B*, at which you wish to arrive, and point *E*, which represents the course and speed you are going to use when, after your initial run out, you turn back to approach point *B*.

He lays his ruler through points *E* and *S*, backs it down to *B* and draws a line.

Come to the course 30° when you will swing onto this line in so doing.

NOTE: The range finder and compass plots show your approach to this line, and when you plot just above it, it is time to come to the course 30°. It makes no difference what point of the line you strike as any point on this line corresponds to point *A* in the Burrage method described above, of which the "answer" is point *E*.

27. Should a later plot show that you missed the line, or having hit it, that you had got off, the mooring board operator gives you a correction by using the method originally described above, i. e.:

Places the ruler through the present plot and point *B*, slides it to *S*, draws a line and picks off new speed or new course depending on which it is more convenient to change.

In line of bearing a change of speed probably would be more convenient; in column, a change of course.

(For other cases where this solution is used, see pages 38, 41, 66, 67, 68, etc., of Standing Order No. 2.)

28. It will be noted that in some cases after getting on the line you steam parallel with the guide before turning in. As long as your speed is the same as that of the guide, this makes no difference. Should it be other than that of the guide, allowance must be made for the distance that will be lost while steaming parallel to the guide. This allowance, as well as the allowance for the distance you are due to lose in the turns, is best made by drawing the line to pass ahead of *B* a distance equal to the loss.

29. With this easy and accurate method available, there is small excuse maneuvers of this class occasioning trouble or delay. Its application is easier and infinitely better than guesswork, and the problem requires less than ten seconds of time for the average mooring board operator. The line generally is drawn before the signal for the maneuver is executed by the flagship.

DISCUSSION

Personnel

(See Whole No. 235, Page 1507)

Captain J. K. Taussig, U. S. Navy.—The reading of Lieutenant Henning's paper titled "Personnel," which was published in the September number of the Proceedings, has awakened in me some thoughts which have been slumbering for quite a while and which required a stimulant like this article to arouse. Personnel being a hobby of mine, due perhaps to the fact that the greater part of my shore duty has been intimately associated with its administration or training, it is perhaps natural that I should be conquered by an uncontrollable desire to discuss Mr. Henning's paper. At least this is my excuse for doing so.

Taking the sub-heads in the order in which they were treated we will first take up "Permanency of Personnel."

It is generally recognized throughout the service that permanency of personnel is a great asset for efficiency, and that due to this lack of permanency we never get beyond the elementary stages in training. In fact *all* ships are practically training ships, not for the higher and more intricate phases, but for the elementary work. Mr. Henning says the first step to remedy this is to: "Make the first enlistment six years." This undoubtedly would have a salutary effect on permanency. It is not the first step, but the second step. The first step necessary for permanency of personnel is *adequacy of numbers.* This, insofar as my personnel experience extends, has never been our fortunate position, excepting during the actuality of war, when, to a large extent the advantage in quantity was largely discounted by the disadvantage of quality. We have never had a proper balance between material and personnel, and the personnel has always been on the light side of the scales. Take for example our present situation where we are allowed 86,000 men. To run properly our navy on a peace time basis requires no less than 130,000 men. With such a shortage it is natural that two great defects are apparent in our personnel distribution. One is that many of our first line ships have no crews at all, and the second is that for those which have crews, there is no reserve for replacements. Now we would not think of not keeping a proper reserve of stores, supplies, fuel, and provisions with which to replenish our needs. But the idea of having a small reserve of men to take the place of those who are sent to hospitals, or of those who are discharged for various reasons, or desert, somehow or other seems preposterous! Our reasoning in general in regard to shortage of personnel both in individual ships and in the navy as a whole is not usually sound. Instead of ships in commission being short of their regular complements, they should have men in excess, especially in the Chief Petty Officer and

Petty Officer ratings. It is these men who must be used as the nucleus for newly commissioned ships in case of war. We must realize that unless there is a decided improvement in our naval reserve affairs, that organization has practically become defunct. Its existence is on paper only.

As for the six-year enlistment term, there is no question but that this would be an excellent thing for the service in just as great proportion as the two-year enlistment was a terribly bad thing. Even with shortage in personnel, the six-year enlistment would add to permanency. But in going after the legislation necessary to obtain this lengthened enlistment period, we must not forget that congressional psychology is at present against it. In other words, instead of asking for legislation which calls for the first enlistment period hereafter to be six years, let us ask for legislation which permits the Secretary to make enlistments for six-years in addition to those terms that are now authorized. The chances are much better for getting the legislation in this form than in the other. It would then be in the province of the Department to authorize enlistments only for six years, and this would be done whenever the navy is recruited to its authorized strength, a condition which should be normal as soon as we once attain normalcy.

Lieutenant Henning's remarks about the continual transfer of officers and men from ship to ship, likening them to "birds of passage," are well made. There is altogether too much of this. But the remedy is not in the measures advocated by him. In fact so long as the four-year enlistment is in force and so long as we have inadequate numbers of men for the ships in service, the proposed remedies are impracticable. The first two of these measures are:

"(1) Allow no transfers *to* ships of the first line of men having less than three years to serve, and

"(2) Permit no transfers *from* ships of the first line until after three years service on that vessel except under exceptional circumstances which must be referred to the Department."

The present conditions as to number of men in proportion to material and as to length of enlistment period are not so very different from what they were shortly prior to the war. At that time the *Texas* was to be commissioned. The Chief of Bureau of Navigation directed that no men should be placed on the *Texas* detail with less than *two* years to serve. *This order could not be carried out.* Owing to the large number of ships in commission in proportion to personnel there was no reserve available to fit out even a single ship with men having two years remaining on their enlistments. It could not be accomplished without taking a number of two-year men from ships already in commission, and it was manifest that if this were done there were no long time replacements for these men, and the instability of *all* these ships was increased thereby. So long as we live from hand to mouth in personnel, ships fully manned with long time crews are impracticable. The only remedies are the six-year enlistment and adequacy of numbers.

Under the heading "Training Station Experience," Mr. Henning writes: "The training station period for every man should be six months, including a three months training ship cruise." This would be an ideal theoretical condition. But is it good under the present practical conditions? For example, is it desirable to place in commission a number of training ships when there are a lot of real fighting ships without crews? To place training ships in service means a further depletion of the fighting ships. It means more training for the recruits but less for the rest of the navy. There should be a proper balance somewhere, but it would seem that so long as we are below our needs in total enlisted personnel we can not afford to sacrifice the fleet training for purely recruit training. Under present conditions as to numbers and length of enlistment period, I believe it better for the navy as a whole to send the recruits direct to the regular fighting ships after a three or four months period at the training stations.

Many of the things Lieutenant Henning says about "Military Standard" are, unfortunately, true. However, he paints the picture a little worse than it has been my experience to see. We should have the same military standard on all ships throughout the service. This is far from so. On the inspection reports of a ship, the flag officer is required to answer the question: "Is she entitled to be called a 'smart ship'?" The answer to this question has, in my experience, usually been decided more or less on the military standard than on the naval standard. There is a difference in the life of a soldier and a sailor. The environment is different, and certainly the work is different, although the ultimate aim of both is fighting efficiency. When it comes to rigidity of action and manner as exemplified by the military standard, I do not believe that life on board ship is conducive to it in the same degree as on shore. While at quarters and at drill, these military standards should be adhered to, but at other times there are certain naval standards which permit of a let down in rigidity and which I believe broaden the man.

Perhaps one of the causes in our failure to maintain a proper military standard, is the sailors' uniform. There is nothing military about it, and if there is any truth in the adage that, "clothes make the man," I do not see how we can expect to keep up a high military standard so long as we stick to our present antiquated and unmilitary uniform. It is recognized that a uniform is necessary for the attainment of military standards, so if we are slack in these attainments let's make a change and put our men in sensible clothes, and give them a proper cap to wear instead of the ridiculous white hat which shrinks until it just sits on the crown of the head, and the big brimmed flat hat which the least puff of wind blows off. Some years ago we changed the Chief Petty Officers' uniform from the old-time sailor style to the present neat affair. Let us give the sailormen something similar and we will find it much easier to maintain military standard.

In Lieutenant Henning's discussions on "Physical Training," and "Morale," he brings out many pertinent points that are worthy of con-

sideration and putting into practice. It will be noted that the time element enters into nearly all of these, and while an hour here and an hour there seem in themselves small, when we take into consideration the very many things that must be done on a man-of-war, they all total up to goodly proportions. We will have more time to spend on physical training, exercises, and instructive lectures, etc., if we succeed in getting beyond that perpetual elementary training state, which can only be accomplished when we get adequacy in numbers together with the six-year enlistment period.

His suggestions about employing the moving pictures for instructing the men in naval history is an excellent one. There is no question but that the periodic replacement of some very poor films now shown, by some that instruct concerning the past history of the navy would have a salutary effect on morale, in that it would tend to improve the *esprit de corps*. It is to be noted that the Bureau of Navigation recently sent to all ships a series of copies of paintings depicting notable scenes during the late war. This is somewhat in line with Mr. Henning's suggestions.

The effect on military standard and morale as exemplified by the manner in which Chief Petty Officers and other Petty Officers perform their military duties is worthy of consideration. Especially is this so where it concerns discipline. Our difficulties along these lines vary according to different ships. It has only been in recent years that we have abolished the rating of master-at-arms. As long as there had been a navy we had had a separate police force for maintaining discipline. Neither the army or marines had such a force. All non-commissioned officers were trained to understand that they were a link in the maintenance of law and order. But in the navy it came to be looked on as a function of "jimmy legs" only. As a result our petty officers became such for professional duties only—they were neither trained nor qualified for military duties.

Even now many of our Petty Officers are appointed entirely on their professional qualifications. We have many petty officer ratings where the incumbent has practically no military duty to perform. They do not control or command other men. In other words, they are officers in name only. The navy regulations provide for their assisting in the maintaining of discipline, but there are no men under their authority. Having this large number of so-called Petty Officers who have no command duties naturally detracts from the value of the others in their military capacities. The remedy would be to have a re-classification in which men who have professional qualifications deserving high rates of pay, but who have no military command, be known as rated men, rather than Petty Officers, and have some distinctive mark other than the Petty Officer rating badge. Then the real Petty Officers could much more easily be made to appreciate the significance of their titles. We can not expect the real Petty Officers to have an appreciation of their military duties so long as we take men into the service from civil life, and make them Petty Officers before they even know what it means to obey orders themselves.

Lieutenant Henning's description of the chaotic situation which existed during mobilization at the beginning of the war, is in no wise exaggerated. In fact these conditions were in many respects even worse than he sets forth. All of which was due, of course, to our lack of preparedness.

We had a Naval Reserve law which had failed to accomplish its intended purpose, so that at the beginning of the war our reserves amounted to almost nothing. Then when war actually came, the reserve force grew with leaps and bounds until it contained over 300,000 men and women. The men who enrolled in the reserves did so simply because there was a limit by statute on the size of the regular navy, and no restriction on the number of reserves. These three hundred thousand so-called reserves were reserves in name only. In reality they were untrained regulars. To quote from "A Study of Our Navy Personnel Situation," published about a year ago in the PROCEEDINGS:

"In other words our present reserve force did not come into existence because of the possibility of war, but because of the actuality of war. As certain as this organization found its creation because of the war, just as certain will it find its death because the war is over. It cannot be saved unless the laws are changed, and unless we come to appreciate the fact that the only reserve that should be maintained in time of peace is one that is at all times qualified for sea service."

We have witnessed the passing of the reserve due to natural attrition, lack of funds, and the general defects in the original law. The laws are from time to time being changed; but under present conditions there is no chance of our having an effective reserve that would permit of an immediate mobilization of even one-half the ships we would wish to place in service. How best to organize such reserves as we have, and how best to provide for an efficient mobilization plan are of vital importance. Unless the reserves are well organized, and unless there is a good mobilization plan, it would be just as well not to spend any money whatever on the reserve force.

I can see no reason why both the organization and mobilization plan should not be effective and efficient under the direct control of our Naval District Commandants, provided sufficient funds are available. These Naval Districts have the machinery for making the plan effective and are now prepared for immediate expansion in case of war. This condition did not exist prior to the late war. I think Mr. Henning's proposal to make each ship accountable for its own reserve, entirely impracticable. The status and stations of our ships are changing too rapidly to make this plan feasable. The destroyer *Dent* may be "based at Philadelphia with reduced complement" today, but tomorrow the *Dent* may be enroute to Asiatic waters, or she may be in full commission or out of commission. Each change of status would require a shift of the reserve personnel and a distribution of them perhaps to several ships. In this kind of a plan there would be no organization for caring for the greater part of the reserves which must be in readiness for placing on board the fighting ships which are out of commission. It seems to me

that our "complex organization heretofore attempted, the Naval District idea," is simplicity itself in comparison with Mr. Henning's suggestion. There are many complexities in Mr. Henning's plan which would not be apparent to one who has not had experience in the actual administration of large bodies of men. Decentralization of authority may be good to a certain extent, but to carry it out to the limit contemplated, could not result in anything but chaos. The idea of each ship having its own reserve force, controlled by itself, cannot be a success for many reasons. But the chief of the reasons are that the status of ships changes too rapidly, and the men for each unit would be too widely scattered. In addition it has been found to be very bad practice to have any man in the naval service consider that he is enlisted or enrolled for a special detail only. All men in the navy, whether regulars or reserves, must be available for duty on any ship and any station the Department sees fit to send them.

Mr. Henning, in his discussion of where the reserve is to be used, says: "It can not be too strongly urged against filling up the complements of the battleships of the first line with reservists." Why only battleships? Why not *all* the ships of the first line? With what are we going to fill up the complements of the battleships if we don't fill them with reservists? There is no reserve of regulars. The only other way the battleships could be filled by regulars (and they would all require filling), would be to take the men from the cruisers, destroyers, and auxiliaries, thereby further depleting their already depleted complements. But would we do this in case of war? Manifestly not, and for very good reasons. The cruisers, destroyers, and auxiliaries will be the ships whose services will be first required in operations against the enemy. Both the cruisers and destroyers are very much more likely to see active fighting than are the battleships. The cruisers and destroyers will undoubtedly see some such service, but the battleships may never have an engagement. We could not afford, at the beginning of a war, to deplete these cruisers and destroyers of their regulars, and send them to the battleships. No, it looks now that in case of war again we would go through the same process as the last time; that is, deplete our battleships of trained men in order that certain other ships may immediately operate. The battleships can probably better take weeks or months to absorb the new material than could the cruisers and destroyers. This of course is not as it should be; but I do not see how under the present conditions, where we have neither an adequate regular personnel or reserve force, it could be helped. We will simply be facing the facts as they exist, and have to take our medicine no matter how unpalatable it may be.

Employment and Tactics of Aircraft in Naval Warfare

(SEE PAGE 1263, WHOLE NO. 234)

LIEUTENANT R. G. PENNOYER, U. S. NAVY.—Commander Jackson has given the service an excellent idea of the "Employment and Tactics of Aircraft in Naval Warfare," and in view of the fact that his article is one of the first and most exhaustive ever written on this subject for the benefit of the Naval Service, it is of particular interest and value.

The author has been careful to state in his footnote that since the author is not an aviator, many of the statements in this article regarding conditions in the air have been taken from the expert opinions of aviators. Undoubtedly these advisers have been heavier than air pilots, and from the standpoint of the heavier than air pilot there is very little in this article to criticize.

On the other hand these advisers have had very little if any experience with lighter than air craft, particularly rigid airships, and in consequence the author has made a very bad case for this type of aircraft.

In paragraph 15 he states, "The largest dirigibles must above all have endurance and ability to keep the air under adverse conditions of weather. Their speed and climbing power are moderate." To state that the speed of this type of craft is moderate is quite true if one compares their speed with that of a fighting plane; on the other hand they have a full speed over twice as great as the speed of our fastest destroyers, a cruising speed of two and one-half times the cruising speed of a destroyer, and a full speed of about eighty-five per cent of that of a large scout seaplane. Furthermore, the statement that their climbing power is moderate is entirely inaccurate. Experiments to determine the rate of climb of rigid airships, made by the German Navy during the late war, gave in one instance a climb of 3,250 feet per minute, and all craft of this type are capable of climbing 20,000 feet in ten minutes without difficulty. I am safe in declaring that no airplane in our navy or in any other navy is capable of such a rate of climb. The ability of an airplane to climb falls off rapidly with increase in altitude, whereas altitude makes no difference in the climbing of a rigid airship.

In paragraph 16 Commander Jackson makes the following statement, "Dirigibles can operate only from the shore, and therefore cannot be counted on for reliable use with the fleet. This was demonstrated at the Battle of Jutland, by the failure of the German Zeppelins, in spite of the proximity to their bases at which the action took place." The first day of this battle was undoubtedly a failure on the part of the Zeppelins, brought about by the adverse weather conditions (fog) existing at the time, and although four Zeppelins were out they were not of much assistance. Eleven Zeppelins did, however, go out on the second day and assist the High Sea Fleet in regaining its base without loss. Since the Battle of Jutland the British have perfected the mooring mast which makes the rigid airship independent of all except the worst possible weather, which

in this respect certainly places the rigid airship on a par with any other type of aircraft.

In this connection the mooring mast experiments carried out with an obsolete underpowered type of airship, H. M. A. *R-33*, at the British Airship Base, Pulham, England, will probably be of interest:

Number of days at the mast	111
Number of flights from the mast	50
Number of night landings at mast	4
Hours flying	171 hours 9 min.
Maximum wind on leaving mast	40 m p h
Maximum wind on landing at mast	26 m p h
Maximum wind experienced while moored	55 m p h
Maximum wind experienced during flight	50 m p h

Heavy rain, hail, snow and thunder storms were experienced with the ship riding readily at the mast.

In addition to the above, work like changing engines, removing and replacing gas bags, and repairs to outer cover were carried on. Naturally operations like refueling, gassing, etc., were also carried on at the mast. As a result of these experiments the Navy Department has erected a larger and more efficient type of mooring mast at the Naval Air Station, Lakehurst, N. J. With such masts erected at all Fleet Bases, rigid airships can certainly be depended upon for "reliable use with the fleet." The next step which naturally suggests itself is the erection of a similar mast on a special aircraft carrier. It is suggested that an obsolete battleship could be taken for this purpose, and the foremast readily converted into a mooring mast, and thus a mobile base for rigid airships obtained. Mooring masts for rigid airships are a fact, and are outside of the experimental state. The application of mooring masts to surface ships, is a suggestion which the writer believes is entirely sound and practical.

As a matter of fact rigid airships can be towed by ships much more readily than can kite balloons, and in good weather gassed and fueled as kite balloons are today. During the war a German rigid, the *L-23*, actually landed on the water alongside of a merchant ship and put a prize crew on board, after which the ship was successfully navigated into a German port.

Paragraph 41 states, "Seaplanes are in existence with a radius of 1,200 miles." If the author means by radius the total distance the seaplane can fly before refueling he is quite correct, but on the other hand the total distance this type can perform scout duty is only one half of this distance, or 600 miles. This distance would be increased a bit if the seaplane were scouting ahead of an aircraft carrier or tender, by the distance covered by the tender, possibly 250 miles additional. On the other hand rigid airships are in existence with a scouting radius of over 3,500 miles, capable of flying a total distance of over 7,000 miles without refueling, and this at a speed of over 50 miles an hour. The *L-72* for instance, now in the possession of the French, was designed for the express purpose

of bombing New York. It is readily seen the tremendous areas aircraft of this type are able to cover in a short time. The author further states that dirigibles cannot be employed in the face of effective aerial opposition. No more can these comparatively slow moving scouting seaplanes. They are no more of a match for fighting type of aircraft than is the rigid airship. The latter can depend upon its climbing ability to keep away from pursuit planes, and can also carry a fighting plane for defensive purposes. On the other hand the only defense a scouting seaplane has against pursuit planes is to land on the sea, such that the fighting plane will not be able to dive downward on the seaplane delivering machine-gun fire directly at the sea plane, but must be content with rapid maneuvering and fire at the sea plane while stationary on the water. It is easy to see the great disadvantage at which the sea plane is placed. Commander Jackson has stated that due to the comparatively low speed of the scouting plane it would not be able to escape when discovered by enemy fighting planes out of supporting distance of its own fighting planes. In this respect the rigid airship is quite superior since it can depend upon its superior climbing ability to escape.

On the other hand it is not expected that effective aerial opposition will be met with, except by chance, until in the vicinity of the enemy surface forces. It is true that a rigid airship is not as easy to conceal as an airplane, but certainly it should be able to see as quickly as she is seen, and then depend upon her superior climbing ability to escape, and her powerful long range radio equipment to get information to the Commander-in-Chief. The position of the enemy forces thus obtained will be much more accurate than where obtained from scouting planes. Commander Jackson is quite correct when he states, "Astronomical observations are difficult to take and untrustworthy due to the inaccuracy of estimating the height of eye, and the discomfort, and exposure of the observer," provided that he is speaking only of heavier-than-air craft and small dirigibles. The navigation of rigid airships presents problems not greatly in excess of those found on a destroyer or submarine. The navigator works in a closed comfortable cabin, and by the use of accurate bubble or pendulum sextants (now on the market), he can make observations any time day or night and not have to depend upon a horizon or height of eye, with an average error of about ten miles, and at the worst certainly not more than twenty miles in error.

Again in paragraph 62 the author states, "The difficulty of maintaining large rigid dirigibles with the fleet far from their shore bases would practically preclude them from this duty," (protective scouting). I have already stated the means by which these craft may be maintained with the fleet, that is, by mooring masts at all fleet bases, by a mooring mast installed on a surface ship, or simply by towing from a surface ship as a kite balloon is towed. The difficulties are no greater, if as great, as the present difficulty of maintaining kite balloons with the fleet.

The author has stated that, "In any case it cannot be seen that dirigibles possess any greater advantages over surface craft for protective scouting

except speed and greater radius of vision due to their higher altitude." After all is said and done are not these the two most important considerations? Then again he states that, "against aeroplanes they would be helpless." I admit that in case the rigid dirigible remained stationary and permitted the enemy aeroplanes to come up and shoot at her, it would very probably prove disastrous for the airship. On the other hand the safety of the airship depends upon its climbing ability. The pursuit planes at present in use in our navy have a maximum rate of climb of 15,000 feet in twenty-four minutes and a ceiling of 20,000 feet; against this a rigid airship can climb 15,000 feet in seven minutes and has a ceiling of 25,000 feet. The answer is quite obvious.

The purpose of this discussion has not been to detract from the aeroplane, for Commander Jackson has very ably presented its case, but on the other hand I have attempted to show the value of the rigid airship.

REPORT OF THE ANNUAL MEETING, 1922

In accordance with Article V, Section X, of the Constitution and By-laws, two weeks' notice having been given, the annual meeting was held at 8:05 P. M., on October 13, 1922, in the Board Room of the Officer's mess, U. S. Naval Academy.

Rear Admiral Henry B. Wilson, U. S. N., Vice-president, presided.

The minutes of the last meeting were approved.

The first stated business being the election of officers, the appointed tellers, reported the votes as follows:

	Votes
For President:	
1. Rear Admiral B. A. Fiske, U. S. N.	358
2. Admiral E. W. Eberle, U. S. N.	195
3. Rear Admiral S. S. Robison, U. S. N.	137
For Vice-president:	
1. Rear Admiral William V. Pratt, U. S. N.	655
For Secretary and Treasurer:	
1. Commander C. C. Gill, U. S. N.	606
2. Commander J. S. Woods	91
For Board of Control:	
1. Captain John Halligan, Jr., U. S. N.	503
2. Commander W. R. Van Auken, U. S. N.	456
3. Commander H. D. Cooke, U. S. N.	450
4. Brigadier General George Richards, U. S. M. C.	449
5. Commander John Downes, U. S. N.	438
6. Captain J. A. Furer, (CC) U. S. N.	364
7. Captain R. M. Watt, (CC) U. S. N.	313
8. Captain H. E. Lackey, U. S. N.	255
9. Commander J. O. Fisher, U. S. N.	210
10. Commander G. S. Bryan, U. S. N.	207
11. Lieutenant Commander A. D. Denny, U. S. N.	164
12. Commander H. G. S. Wallace, U. S. N.	150
13. Lieutenant Commander J. A. Murphy, U. S. N.	89

The chairman then declared the following officers elected for the ensuing year:

President: Rear Admiral B. A. Fiske, U. S. N.
Vice-president: Rear Admiral W. V. Pratt, U. S. N.
Secretary and Treasurer: Commander C. C. Gill, U. S. N.

Board of Control: Captain John Halligan, Jr., U. S. N.
Commander W. R. Van Auken, U. S. N.
Commander H. D. Cooke, U. S. N.
Brigadier General George Richards, U. S. M. C.
Commander John Downes, U. S. N.
Captain J. A. Furer, (CC) U. S. N.

The following remarks were submitted by the Secretary:

MEMBERSHIP

There are at present 4,835 members, of which three are honorary members, 144 life members, 4,164 regular members, and 524 associate members. Of these, about 375 have been suspended, either for not advising the Institute of changes of address, or for being in arrears for dues for two or more years.

The changes in membership during the year were as follows:

Resignations:		
Regular	394	
Associate	30	
		424
Deaths:		
Regular	25	
Associate	3	
Life	1	
		29
Dropped:		
Regular	347	
Associate	---	
		347
Total loss in membership		800
New members		147
Net loss in membership		653

FINANCIAL STATEMENT

In round numbers, the financial activities of the Institute for the year have been as follows:

The gross value of business receipts was:

Books copyrighted by the Institute	$40,600
Purchased books	3,200
Dues and subscriptions	11,360
	$55,160

The Book Department made a gross profit of $19,000. Operating expenses amounted to $18,500, leaving a net profit here of $500 for the year.

The printing of the PROCEEDINGS has involved a loss of $6,000 which is just about offset by interest on investments and bank deposits. During the last year, the PROCEEDINGS have been taken away from the Lord Baltimore Press and awarded to the Banta Publishing Company, in Wisconsin. The Lord Baltimore Press printed the first five issues at an average monthly loss of $875. The remaining seven issues were printed by Banta at an average loss of $230. This change in publishing houses shows a saving to the Institute of between $7,500 and $8,000 per year on printing the PROCEEDINGS at present prices.

In spite of this saving, the publication of the PROCEEDINGS still involves a monthly deficit that is a heavy tax on the resources of the Association. As this deficit can best be overcome by an increase in the membership roll, the loss of 653 members during the last year is a serious matter. However, the gradual decrease in membership during the last few years may be looked upon as an aftermath of the war. Earnest effort is being made to counteract this, and there are encouraging signs that it will soon stop and the tide turn the other way. If the Service will give the Institute a little more support it will not be necessary either to curtail the PROCEEDINGS or to increase the yearly dues.

Fortunately, the Institute is in sound financial condition. Considering our total income and total expenses during the past year, the increase in net worth is $1,500. The net worth of the Association on September 30, 1922, was $176,867.03.

PROCEEDINGS

In carrying out the object of the Naval Institute: viz., the advancement of professional and scientific knowledge in the navy, the most important activity of the Association is the monthly publication of the PROCEEDINGS. Endeavor is constantly being made to increase the usefulness of this magazine to the Naval Service.

It is aimed each month to present to our readers a balanced assortment of original articles on subjects of Naval interest, setting forth authoritative discussions of Naval policy, Naval

administration, Naval science, and Naval history. As the Institute depends almost entirely upon contributions from members of the Association, co-operation of all hands is necessary in this work.

The Professional Notes section of the magazine is an important feature. A recent change has been made by which two officers now work on the compilation of these notes, one on duty here at the Naval Academy, and one on duty in Washington. We now have a list of 180 periodicals of Naval interest. Of these, forty-seven of the most important ones are received here in Annapolis and gone over by Lieutenant Commander Rockwell. The balance are reviewed by the Washington compiler, Lieutenant Heffernan. There is thus produced a digest of current Naval thought, as expressed both at home and abroad, invaluable to officers desiring to keep abreast of their profession. Also a reference list indicating subject matter of articles of service interest, published during the month, is a part of this section.

The Notes on International Affairs have been prepared by Professor Allan Westcott, of the Naval Academy, since 1915, and by their established usefulness have become a fixture in the PROCEEDINGS.

The Board of Control has approved a policy to extend and improve the book review columns of the PROCEEDINGS. In this connection, the following suggestion has been made:

"The Naval Institute has a considerable library of professional books. There are also available, handbooks and reference books of various descriptions, as well as magazines and periodicals, both domestic and foreign. It is planned to extend and improve the review columns of the PROCEEDINGS and to publish promptly reviews of books on naval, professional, historical, and international subjects, giving authoritative information as to their respective scope and value. This will involve the collection of a valuable and complete library of current literature on topics of interest to the service.

"The Institute would be pleased to have the Naval Academy gain all possible advantage from this library. It is therefore suggested that if practicable, room "A," adjacent to the Institute offices, be assigned to the Institute for use as a library open to the Naval Academy teaching staff. If this is approved by the

Superintendent, the Institute will provide a reading table and chairs, and will also be glad to detail from its clerical force a librarian, to take charge of this library so that books may be drawn out, under similar rules and regulations as are in force in the Naval Academy Library."

This suggestion has been approved by the Superintendent, and steps will be taken in co-operation with the library committee to carry it out.

It has been the policy of the Institute, always, to do all it can to help the Naval Academy authorities to produce high grade textbooks on professional subjects taught midshipmen. In accomplishing this, the following considerations govern:

(a) That text and context be of standard that will reflect credit on the Naval Academy and the Service.

(b) That the best available talent be obtained to write or compile these books.

(c) That the midshipmen and the Service be given the benefit of as low a price as practicable on these books.

In carrying out this policy, the Institute has recently adopted a modified plan of procedure, whereby the midshipmen will be given the benefit of a more reduced price.

The new book on *Navigation,* the revised edition of *Elementary Mechanics,* and the *Manual of Athletic Requirements* have all been made under this new plan with satisfactory results.

The offices and books of the Institute are open to all members, and constructive criticism is welcome.

The above remarks of the Secretary were voted approved. (Details of the attending discussion may be found recorded in the annual minute book of the Association.)

There being no further business, the meeting adjourned at 9:15 P. M.

C. C. GILL,
Commander, U. S. Navy, Secretary and Treasurer.

U. S. NAVAL INSTITUTE

SECRETARY'S NOTES

Membership Life, regular and associate, 4,839.

New members, 24. Resignations, 4. Deaths, 5:

Rear Admiral Seaton Schroeder, U. S. N.

Rear Admiral C. E. Clark, U. S. N.

Lieutenant J. T. Pennycook, U. S. N.

Lieutenant E. L. Ericsson, U. S. N.

Lieutenant R. F. Armstrong, U. S. N.

Practically the whole service receives the benefit of the PROCEEDINGS, yet many officers who read it monthly are not members, and therefore contribute nothing to the support of the Institute.

The publication of the PROCEEDINGS involves a monthly deficit that is a tax on the resources of the Association. As this deficit can best be overcome by an increase in the membership roll, the loss of 653 members during the last year is a serious matter. However, the gradual decrease in membership during the last few years may be looked upon as an aftermath of the war. Earnest effort is being made to counteract this, and there are encouraging signs that soon the tide will turn the other way. If the Service will give the Institute a little more support, it will not be necessary either to curtail the PROCEEDINGS or to increase the yearly dues. *Members are requested to urge non-members to join.*

Dues The annual dues ($3.00) for the year 1922 are now past due.

Regular and associate members of the U. S. Naval Institute are subject to the payment of the annual dues until the date of the receipt of resignation.

Discussions Discussion of articles published in the PROCEEDINGS is cordially invited. Discussions accepted for publication are paid for at one-half the rate for original articles, or about $2.25 a page.

Articles

The Institute desires articles of interest to all branches of the service, including the reserve force. Attention is invited to the fact that the submission of articles is not limited to members, and that authors receive due compensation for articles accepted for publication.

The attention of contributors is requested to the difficulties attending the publication of long articles in the PROCEEDINGS. The number of pages in each issue is limited. Also, members have criticized the unbalanced effect resulting from the publication of long, discursive papers. It follows that compact, well digested articles are more likely to be accepted for early publication.

Book Reviews

As soon as practicable after the publication of books on subjects of professional interest, the Institute aims to publish authoratative reviews of them.

The Board of Control has authorized increased compensation for book reviews in order to improve these columns in the PROCEEDINGS.

Book Department

The Institute Book Department will supply any obtainable naval, professional, or scientific book at retail price, postage prepaid. The trouble saved the purchaser through having one source of supply for all books should be considered. The cost will not be greater and sometimes less than when obtained direct from dealers.

Attention is invited to the following books that are additional to those listed in our advertisement columns:

The Boat Book, 1920—price: 50 cents.

Landing Force and Small Arms Instructions, price: $1.00.

Principles Underlying Radio Communication, 2nd edition (comprising radio communication pamphlet No. 40, prepared by Bureau of Standards; revised to May 24, 1921 by Signal Corps, U. S. A.) price: $1.00.

Address orders to: U. S. Naval Institute, Annapolis, Maryland.

Address of Members

To insure the delivery of the PROCEEDINGS and other communications from the U. S. Naval Institute, it is essential that members and subscribers notify the Secretary and Treasurer of every change of address without delay.

Reprints of Articles

The attention of authors of articles is called to the fact that the cost to them of reprints other than the usual number furnished can be greatly reduced if the reprints are struck off while the article is in press. Twenty copies of reprints are furnished authors free of charge. When the article is submitted, authors are requested to notify the Secretary and Treasurer of the number of additional reprints desired.

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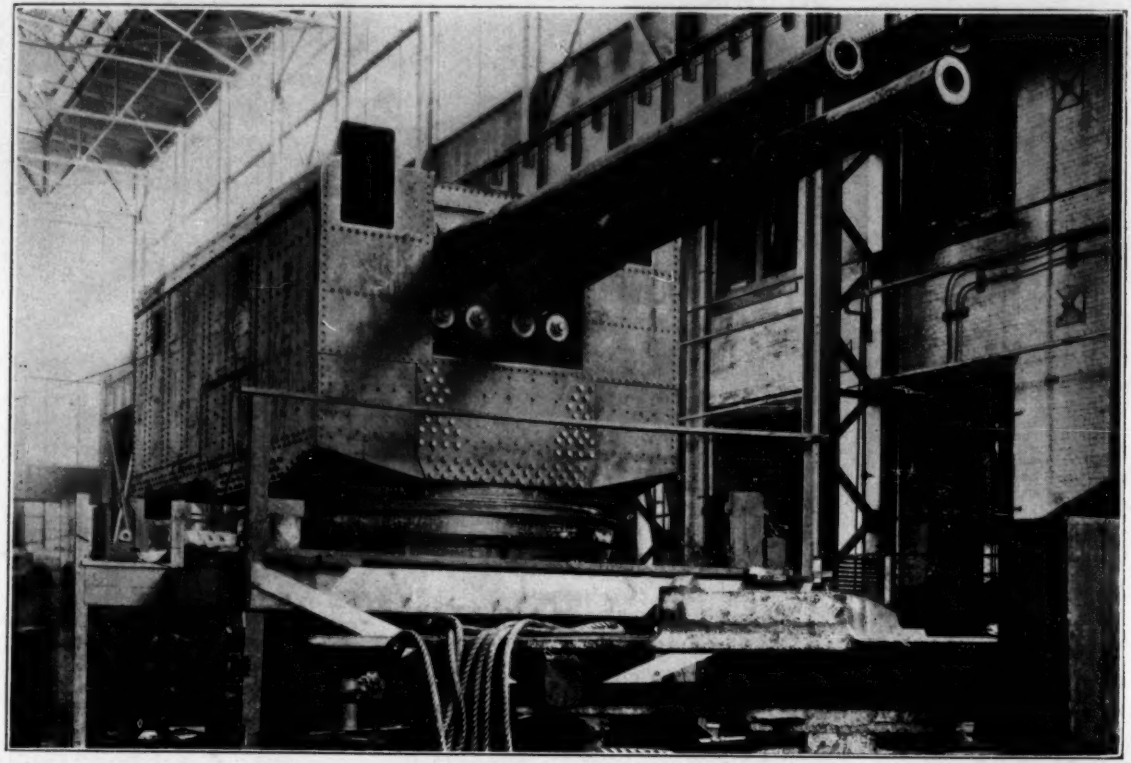

TWIN SIX-INCH MOUNT TO BE INSTALLED ON SCOUT CRUISERS

PROFESSIONAL NOTES

PREPARED BY

LIEUTENANT COMMANDER F. W. ROCKWELL, U. S. NAVY

and

LIEUTENANT J. B. HEFFERNAN, U. S. NAVY

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FRANCE

NEW CONSTRUCTION.—The French Naval General Staff has announced that construction has begun on the following vessels of the 1922 program: FLOTILLA LEADERS: (2,400 tons) *Jaguar* at Lorient; *Panthere* at Lorient. LIGHT CRUISERS: (8,000 tons), *Duguay-Trouin* at Brest; *Primauguet* at Brest; *Lamotte-Piquet* at Lorient.

SEAPLANES ON HAND SEPTEMBER 30.—The Service *Central de l'Aeronautique Maritime* announces that the French Navy possessed the following planes on September 30, 1922:

AIRPLANES	Number
HANRIOT 80 hp. *Rhone* (for school use)	30
HANRIOT 130 hp. *Clerget*	12
BREGUET 300 hp. *Renault*	12
NIEUPORT 180 hp. *Rhone*	6
FARMAN bimotor 500 hp. *(Salmson)*	2
FARMAN bimotor 450 hp. *(Lorraine)*	2
Total	64

SEAPLANES	
F. B. A. 130 hp. *Clerget* with hull (For school use)	25
HANRIOT 130 hp. *Clerget* with floats (For school use)	24
FARMAN C. L. 300 hp. *Renault* with hull	100
FARMAN trimotor 1,000 hp. *(Sunbeam* or *Lorraine)*	2

LATHAM trimotor 950 hp. *(Sunbeam)*.....	6
LATHAM quadrimotor 1,000 hp. *(Salmson)*.....	2
Total	159

FRENCH FOREIGN POLICY.—Probably no man in France was better equipped for discussing the foreign policy of France than was the late Senator Paul Deschanel. The following was prepared by Monsieur Deschanel for delivery in the Senate. He died before the date set for his speech and it is published now posthumously.

GENTLEMEN: I am asking certain information of the Government on our foreign policy.

First I would point out, in agreement with Messieurs Ribot, Doumergue, and Poincare, the disadvantages of diplomatic practices as carried on since 1919.

In all times past, under all régimes, absolute monarchy, committee of public welfare, directoire first empire, constitutional monarchy, we sent ambassadors accredited to foreign States and the ambassadors reported to the Minister of Foreign Affairs the results of conversations. The minister would then take up with the cabinet the matter to be examined. After deliberation in the cabinet the foreign minister would issue appropriate instructions to his agents (ambassadors or ministers).

This method had the advantage of affording several lines of retreat, time for study of a question, time to prepare well considered replies, and finally to grant concessions only at the highest cost to an opponent.

While it did not exclude interviews between heads of Governments, yet such interviews were prepared in advance and not left to impromptu conversations.

On one occasion a chief of State, Napoleon III, thought to treat directly with foreign governments. More than once he negotiated without the knowledge of his foreign ministers, and even in opposition to them, and in 1870, in the absence of his Premier, Emile Chiver, he demanded of William I certain guaranties which resulted in the breaking out of war.

This method of handling international affairs was resumed again in 1919.

New Diplomatic Methods

Three men, who became prominent because of their great services in the War, the President of the United States, the British Premier, and the French Premier (I omit the Italian Premier only because he confined himself almost exclusively to questions regarding Fiume and the Adriatic); these three men excluded from their deliberations people who had fought and shed their blood with us, Belgium, Serbia, Rumania, Poland, and Tcheco-Clavicia, as if these noble peoples had the right of equality only in sacrifice; they called them "States with limited interests," as if the heroic Belgium Army that stopped the invader at Liege had defended a limited interest; and without control of any kind, without official and authentic *procès-verbaux*, without heeding the warnings and counsels of the chiefs who had won the victory, they took it upon themselves to dispose in regal fashion, of France, Europe, and the world.

Whatever judgment be passed on their work, I claim it to be in formal contradiction with the principles of the Republic, with the democracy, and with the parliamentary system, and I claim that if we do not do our utmost to preclude the return of that method of conducting our foreign relations we shall be remiss in our duty to future generations.

In the last discussion of the budget for the foreign office, Monsieur Briand showed little enthusiasm for these new methods of procedure, saying only that they resulted from the treaty of peace. They are not a consequence of that treaty but have followed it. It is but natural that

those who have profited by these methods should cling to them; but I believe that, as regards France, every advantage is to be gained by returning as soon as possible to sure and normal diplomatic rules.

This is the advice also of certain English statesmen of long experience. On January 27, 1922, Lord Gray expressed himself as follows:

"Because I have criticized the supreme council I am said to advocate secret negotiations. * * * I have in no way spoken of secret methods. I have stood for the calmest methods, methods the most set. One may work in quiet without necessarily working in secret. * * * Do they think the new methods of the supreme council to be secret? And is it not time that there is more secrecy now in the present Government's method of carrying on foreign relations than formerly? * * * To-day we hear much of the supreme council, but there are no records kept of their doings. Under the old system there would be kept *procès-verbaux* of their conversations, and frequently these would be published by way of showing the course that had been followed. The new method followed to-day is to report the fact of a meeting between 'the French and British Premiers,' but without giving any account of their conversation. In the procedure of the present Government there is on the one hand too much limelight, and on the other too much secrecy."

The treaties resulting from the new method, such as that of Versailles, and those following it, control now and will continue for long years to control our whole policy. We must then, in order to know where we stand and where we are headed, determine most precisely the consequences of that policy.

The Legend of Our Militarism

We are charged in Germany, and, most remarkably, in England and the United States, with ambitious aims, even imperialistic ambitions. Is there, I ask, a single Frenchman who would repeat the fault committed by Germany in 1871, that of introducing German representatives into French assemblies? No; but the leaders who won the war believed that certain measures of security were indispensable in the common interest of the Allies; and, over and above that, they agreed with the members of the committee charged with the negotiations with such men as Messieurs Charles Benoist, Aulard, Bourgeois, General Bourgeois, Cherquet, Derus, Gallois, Larisse, Pfister, Seignobos, and our leading geographer, Vidal de La Blanche. I am unable to name all of them. Certainly, these men were not imperialists anxious for conquests; they were students, republicans, professors, who knew geography and history. Moreover they were in agreement with the people in the Rhineland who had been subjected against their wills to Prussian domination and who, in a series of noisy demonstrations, claimed their autonomy under Germany.

What were the arguments of the English representatives that rejected the opinion of generals, of professors, of the Rhine people, and what arguments did the French plenipotentiary oppose? We do not know. What we do know is that on the seventh of last February (1922), at the opening of the British Parliament the Premier declared that he had to reserve the left bank of the Rhine against the operations of French annexationists.

This is the whole question of our relations with England, or rather with the cabinet now governing England.

Twenty years before the celebrated visit of Edward VII to the Paris Chambers of Commerce, I wrote that the entente between France and England was a fundamental necessity in European politics, that their long quarrel over colonies had become an anachronism since 1870. I have always felt that greatest admiration for Great Britain, for her literary and scientific genius, for her institutions, for her men in political life. And as

for the statesmen who now directs her destinies, we cannot, without ingratitude, forget the great service he rendered the cause of right during the war. The unity of command, so long desired by our President and by our generals, was realized through his efforts, placing Foch in command of the whole western front.

There is one thing, however, which the English place above either the admiration or recognition they inspire, and that is the use of firm language such as they do not hesitate to use on every occasion.

No one is infallible, neither we nor they—none. But what enlightened Englishman, having in his mind any thought for the future, could pretend that when, in 1815, Lord Castlereagh put Prussia on the left bank of the Rhine, he had not laid seeds of serious complications for not only the peace of France, but for that of England as well? Only, Lord Castlereagh had a motive: Europe in turmoil for long years of Napoleon, British diplomacy sought to contain belligerent and conquering France by a warlike nation on her frontiers; thus does the abuse of power ever provoke similar reprisals.

And what enlightened Englishman, having in view not only the present but also the long perspective of history, would to-day uphold Gladstone for taking Lorraine from us in 1871, and placing Europe in a state of turmoil and uncertainty for well-nigh half a century?

But Gladstone had a reason—the secret negotiations between Napoleon III and Bismarck concerning Belgium and Luxembourg.

It is not we, however, who have menaced Belgium this last time, nor we who, after having deceived Belgium, covered her with blood and ruins.

If the English Government, which did not expect this aggression—I was convinced of this when visiting London in 1912—had spoken a little more quickly, William II would not have dared invade Flanders. And would not this word, spoken in time, have spared England and the world incalculable disasters?

And it is in the light of such facts that certain English people suspect us of unnamed ambitious designs, even of perfidy to them.

At Washington the British Admiralty presented the hypothesis that contemplated an attack of the English coast by our submarines. Some Americans and even some English were unable to suppress a smile at such a thought. But even if failing in our loyalty, would not our interests forbid our planning to separate ourselves from our neighbors? France and England need one another; they cannot do without one another. When our delegates in Washington finally grasped this point they were able to clarify the situation, but it is unhappy that they should not have had an earlier occasion for so doing. These prolonged silences made the American people doubt our intentions—this great people whom our fleet had aided so heartily to gain their independence.

France militaristic? Here are the figures:

Budget for 1922

	Expenditures (in francs)			
	Military	Naval	Aeronautic	Total
English	5,365,895,600	4,288,908,000	957,372,000	10,612,175,600
French	3,700,345,454	843,618,295	254,652,440	4,807,616,189

England's traditional policy has been to seek and maintain a balance among continental powers, to back the weak against the strong; the losers against the winners of a war. I have just shown that she has not always succeeded, and that, without so desiring she has more than once been responsible for menace and peril to the peace of the world.

However, she signed the treaty of Versailles. Should Germany violate the treaty it would be the greatest imprudence to deny the territorial guaranties provided in the treaty. For England, such a procedure would be quite a different menace than would be our submarines. In defending the common frontier, we are saving not alone our own country, but as well the liberty of the world.

If the two nations concluded an alliance, we hope it will provide against German aggression in Poland, for unless due precautions be taken as to this, the peace of Europe will be uncertain and precarious.

As to reparations, the supreme council, contrary to the treaty, has put itself in the place of the Reparations Commission in fixing the amount of the indemnity and the method of payments; whence the reduction of forty per cent in our credit, according to some, and fifty per cent according to others.

Eminent financiers, such as M. Ribot, Milles-Lacroix, and Cheron, speaking with full knowledge and authority have shown our economic situation in comparison with that of Germany, and what will be our situation if we do not require Germany to meet her signed obligations. Since the treaty did not specify either the amount or the methods of payments, the Germans are slow in finding the money for making payments, though they find it for their own profit and for the purchase of arms. But, with America demanding payments from us how can we satisfy them, if Germany does not first pay us? To take over control of Germany's finances is the only method of obtaining what is due us. Only when an inquiry has regulated this matter of reparations can the affairs of the world be set to rights.

Meanwhile the British Premier advances the proposition of a conference where French delegates are to sit as equals with men from Germany and with soviets, but which the United States will not attend.

Be it said to his credit, Monsieur Poincare asks precise conditions and guaranties; the treaties and the League of Nations not to be attacked; reparations to be treated separately from economic reconstruction of Europe; and lastly, Russia not to be admitted to discuss the policies of foreign States and the payment of debts.

These are excellent principles; only we know that the soviets, in order to attack industry and commerce, to get new material and to start the factories, are ready to sign anything put before them, even to give over their ports to international administration and police, saying to themselves that they can at any time take them back.

But while this might be to the interest of commerce, it does not hold so much of promise to holders of Russian securities. According to figures which are necessarily approximate, Russia's foreign debt is divided about as follows:

	Billion
To France	25
To England	19
To Belgium	3½
To Germany	3½
To Switzerland, Holland, and Scandinavia	5
To United States	2
Total	58

France has thus advanced twenty-five billion francs at par, on a foreign debt of fifty-eight billion, for the economic equipment and national defense of Russia, or about forty-three per cent of that debt. We must thus create an international organization for the control of Russia's commerce, in order to levy on her exports and imports the amounts due the holders of her securities, and in proportion to the holdings of her creditors. The question is if the Bolshevist Government will lend itself to such a proposi-

tion. There is no virtue in Lenin's confession of errors in his communistic efforts unless he were to accept this, and I doubt if he will.

FRANCO-AMERICAN RELATIONS.—The following is a translation of an article by Andre Tardieu, French deputy:

The reason why the United States, in financial and economic matters, is so distant from France is because we have done nothing to draw the United States near to us.

1. The return in the near future to Paris of M. Jean Parmentier, director of bonds, etc., in the bureau of the minister of finance, is not of much significance.

2. Mr. Parmentier went to Washington, not to treat with the subject of debts nor to discuss it. His mission simply consisted of presenting to the American Treasury an exact table giving the financial situation in France. This having been accomplished, the director will return to France and give an account of his mission. I cited the other day the opinion of Mr. Abbot, chief editor of the Christian Science *Monitor*, in his statement: "The politicians in the United States are fully aware that France cannot pay in gold, and if she pays in merchandise the American markets, already overstocked, will suffer greatly." They are aware of this fact, but no one dares to say so.

3. The great drawback in this whole affair is that there does not exist any solidarity of affairs between America and France, and consequently no one in New York or Chicago is interested in making any arrangements to facilitate payments.

4. I had hoped in 1918 to create this solidarity to endure for many years, but for reasons of internal politics I was unable to succeed.

5. It was in the middle of October, 1918, that victory was reasonably certain and the problem of reconstruction was already thought of. To me the financial aid of the United States was absolutely necessary to carry out any construction in a large scale. The American law authorized the Treasury Department to loan money to the Allied Governments only for the war and during the war. If then we had wished to have credits for construction, it was necessary to have another law passed.

6. To take the necessary steps to have this new law passed was what I was about to ask Mr. McAdoo, Secretary of the Treasury. After negotiating with Mr. McAdoo for five days we arrived at an agreement, and he informed me that he would present the matter to Congress. I returned to France having obtained his promise in connection with this matter. Upon my return, the Communists' press attributed my voyage to the most extravagant motives.

7. The law as contemplated would have permitted us to dispose of several billions in credits. Of course it must be understood that under the same conditions that dollars were loaned for the war, that the dollars loaned for construction would have to be spent in the purchase of material in the United States or in the employment of American workmen. In any event we would have had the benefit of the powerful American industrial organization to help us rebuild our ruins and we would not have had to make any immediate payment.

8. When I returned to France, I immediately met with all sorts of resistance. I begged M. Loucheu and Clementel, minister of the reconstruction of the industries, to draw up a program—that is to say, a list of material to be purchased in the United States and the number of American workmen needed to complete the work. I was not able, notwithstanding my insistence, to receive any reply.

9. My two colleagues spoke of the necessity of assuring work to the French factories and by every means to avoid unemployment. From November, 1918, until May, 1919, this situation did not change. Several

American and English industries came to Paris, due entirely to the proposed law which McAdoo had under consideration, with the view of aiding us to rebuild the devasted country, and naturally to make a certain profit on the deal. It resulted that during the month of May, the American Treasury, seeing that the demand for credits was no longer desired, did not present the proposed law for passage. The party of protective reconstruction triumphed. We missed the chance to have foreign capital become interested in the rebuilding of France. I believe that this was an error; as sufficient proof we have only to recall that M. Loucheur, the champion of protection in 1919 was in 1921 the negotiator of the accords with Wiesbaden, against which we have heard the objections of the French firms.

10. And above all, this helped to weaken the business ties between the United States and France. I say it without irony, but as the result of experience. If we desire to arrange sentiment we must also find a means of satisfying business interests. All of this time the American production would have been associated with our efforts and the American people would have many times brought pressure to bear with their Government in our favor.

11. Nothing is more useless than the regrets of what might have been. The above is simply to clarify the present difficulties. The greatest danger in the present financial situation is the strong partition which separates the French interests from the interests of the Anglo-Saxons.

12. I will be greatly mistaken if M. Parmentier, upon his return from the United States, does not confirm this sentiment.

FRANCE–BRITISH CO-OPERATION.—The question of eventual naval co-operation has been examined in the most friendly spirit by Admirals Beatty and Grasset, and, should circumstances require it, events would show that the squabbles of politicians have not weakened the hearty sentiment of comradeship which fifty months of close fraternity of arms in the face of a common danger have so firmly established between Jack and Mathurin. In the course of their exchange of views the two Allied Admiralties promptly recognized that future co-operation has been rendered easy by what the two navies have achieved together. They could anew become parts of the same supreme naval force. It is no longer a secret that, although President Poincaré unreservedly worked in favour of conciliation in the Turkish question, he has ordered at the same time effective preparations with a view to standing by England should the latter be threatened in her vital interests.—*Navy and Military Record*, 4 October, 1922.

DELAY IN RATIFICATION.—Paris, October 11.—Although a certain parliamentary group in France today is urging ratification of the Washington naval reduction, it is declared that even in case ratification was decided upon it would not come in time to be of help to the Republican party in the November elections.

The Naval accord, which is still going the rounds of various naval commissions, is scheduled for a vote in the sessions of the Chamber which commences Thursday, but uncertain events in the Near East, the spector of Russia and the loss of the battleship *France* are causing doubtful predictions as to early ratification. Furthermore, the fact that other European signatory Powers have not ratified the pact does not hasten action by France.

The official view of France is that she must ratify the accord, especially in view of her recent protestations before the League of Nations on the subject of disarmament, and because France wants something tangible to support Premier Poincare's "peace policy" in the Near East imbroglio.

Many difficulties still stand in the way, principally an extra heavy program for the coming sessions.—*Boston Evening Transcript*, 11 October, 1922.

EFFICIENCY OF SUBMARINE FORCE.—Although not more than 2,400 seamen are affected to the underwater branch, the French submarine force has given lately unmistakable proofs of efficiency. Either singly or by pairs our submersibles undergo, as a matter of routine, endurance tests of long duration that are directly and indirectly benefiting personnel and matériel, and it is *la mode nouvelle* for specialists of the constructional branch to take a part in those prolonged trials of new or modified craft. Whereas before the war submarine commanders were officially deprived of initiative, and jealously kept in the shadow of the flagship with a view to playing a rôle in fleet action, they are now trained to act independently and to seize opportunities for bold enterprise. The pre-war French submarine force proved something of a disappointment, but past mistakes have been corrected, and a new spirit animates the flotillas, in which cheerful confidence prevails.—J. B. GAUTREAU, *Naval and Military Record*, 27 September, 1922.

COMMERCIAL ADVERTISEMENT BY NAVY.—An experiment is being made in France in the way of utilizing the navy for commercial propaganda work. The two battleship cruisers *Jules-Michelet* and *Victor-Hugo* will start shortly on a nine months' cruise to Madagascar, Australia, New Zealand, Japan, China and India, and will carry catalogues, prospectuses, documents and literature of all kinds, provided by traders and manufacturers for distribution to those whom they may interest in the ports visited. There will be persons in attendance to give information upon the goods that France is able to export. The cinematograph will be employed to show the manufacturing and industrial resources of the country.—*The Engineer*, 29 September, 1922.

FRANCE AND NAVAL DISARMAMENT.—Admiral Favereau, the distinguished French officer who during the war held an important North Sea command, has been expressing himself rather frankly on the subject of naval disarmament. In common with many of his countrymen, he believes France will best serve her interests by refusing to ratify the naval treaties negotiated at Washington. He considers them to have been drawn up chiefly with an eye to the interests of Britain, America, and Japan, and thinks that the only fair method of naval limitation is to make relative strength as it existed in 1914, the basis of future tonnage ratios. If that were done, France would have a much larger allotment of capital ship tonnage than has been conceded to her. Not only would she take precedence over Japan, but instead of being placed on a level with Italy she would be twice as strong as that Power.

The admiral is also very severe on the submarine agreement, which he regards as contradictory, seeing that the first paragraph is virtually stultified by later ones. "It would appear," he says, "that the Washington Conference behind its seeming humanity marked a triumph of selfish interests. The French nation has therefore decided not to ratify those interests." It is hardly necessary to remind Admiral Favereau and others who think as he does that such action by France would bring about a serious situation, which might render the entire work of the Washington Conference null and void. Repudiation of the submarine agreement alone might not be such a grave step, except from the moral point of view, since that instrument might in any case break down under the stress of war; but failure to ratify the naval limitation compact would reopen the whole question of future relative strength, which, it was hoped, had been settled for at least a decade.—*Naval and Military Record*, 4 October, 1922

GREAT BRITAIN

NAVAL COMPETITION REVIVING.—Realizing the grave position in which the American Navy would be placed if a sudden emergency found it without a single high-speed cruising ship, the General Board is anxious to push forward the completion of the ten *Omahas* with all possible haste. As regards the new vessels whose construction is to be recommended, they will almost certainly be designed as a match for the 10,000-ton cruisers which Japan is about to lay down. This being the limit of displacement which the Naval Agreement permits, it will be interesting to observe how Americans and Japanese constructors tackle the problem of incorporating the best fighting qualities in a vessel of that size—always assuming that Congress can be prevailed upon to vote the money for new cruisers.

Idealists in America have unfortunately spread the delusion that naval rivalry was completely stopped by the Washington Conference, when, as a matter of fact, it was simply diverted into another channel. The process of disillusionment is likely to be painful, and may lead to much acrimonious comment at the expense of Japan. As it is, the threatened revival of shipbulding competition in the lighter types of warships is the logical sequel to the refusal of the Conference to accept Great Britain's proposal for abolishing the submarine, a refusal to which the United States was unquestionably a party. Had the submarine been vetoed there would have been no difficulty in applying the tonnage ratio to all types of fighting craft, instead of to capital ships only, in which case the world would not now be on the verge of a new phase of naval competition.

THE SUBMARINE FLEETS.—The American Navy's demand for additional submarines is rather surprising, in view of its generous supply of these craft. In October of last year it had 148 boats. Since that date twenty-two old boats have been placed on the disposal list, so that the total establishment is reduced to 126. This figure, however, still compares very favorably with the British total, which in the course of the present financial year is to be brought down to fifty-eight, as announced by the First Lord in his statement on the current Navy Estimates. Adding six boats now in Australian service and two in Canada—though the latter will probably be scrapped—the submarine establishment of the British Empire comprises only sixty-six boats all told, or little more than half the American total. The precise strength of Japan in these craft is uncertain, but she is known to have in hand a large program which, when completed, will place her second only to the United States in point of numbers.

The real strength of the Japanese submarine position is believed to lie in the large proportion of boats which are endowed with an extensive radius of action. On the other hand, most of the American submarines are short-range boats which could not be used for independent trans-Pacific operations. Probably, however, the published figures of submarine endurance are no more to be relied on as a true index of radius than were the fuel endurance figures of surface ships in the coal-burning era. In those days it was customary to deduct from forty to fifty per cent from the nominal maximum, owing to the heavy consumption of fuel for driving auxiliary machinery. The result was that cruisers with a paper range of 10,000 miles were unable in practice to steam more than half that distance without bunkering. Another factor that enters into the question of submarine range is the capacity of personnel to endure the strain of prolonged service in these boats, which are not distinguished for habitability. For the largest German submarine built during the war, a radius of 20,000 miles was claimed but it is very doubtful whether the crew could have remained fit and efficient after half that distance had been covered without putting into harbor.—*Naval and Military Record*, 20 September, 1922.

PROHIBITION ON THE HIGH SEAS.—It is perhaps as well that events of more immediate gravity in the Near East should have diverted attention in this country from the singular incidents which have been taking place across the Atlantic in connection with the suppression of "rum running." Up to the present more than a score of British vessels have been seized by ships of the U. S. "Prohibition Navy," most of them admittedly far beyond the three-mile limit to which American jurisdiction is legally restricted. In one or two cases this high-handed procedure has been resisted, the latest instance being that of the British yacht *Onward*, whose skipper refused to let the American revenue officer come on board and forcibly removed his hands from the rail. It is admitted at Washington that there is no statute in the international code which justifies this high-handed procedure on the part of the American revenue officials, and only its prompt discontinuance can absolve our Government from the unpleasant duty of making strong representations to Washington.

That the advocates of prohibition should feel annoyed at the spectacle of foreign ships bringing cargoes of forbidden liquor to the vicinity of their coast is easily understandable, but that is no reason why they should set at naught one of the cardinal rules of international law and molest British ships which, technically at least, are passing on their lawful occasions well outside American territorial waters. There seems not a shadow of doubt that the Prohibition patrols have been guilty of arbitrary and grossly illegal acts, incidentally violating the very principle which their own country fought to defend in 1812. Fortunately, there are signs that the Washington authorities intend to curb this intemperate zeal on the part of their subordinates. They have, in fact, forbidden the seizure of foreign ships outside the three-mile limit, and everyone will hope that this order will put an end to a course of conduct which, if persisted in, might react unfavorably on our excellent relations with the United States. A touch of irony is given to the situation by the remark of a New York paper that for every gallon of liquor seized in foreign ships a thousand gallons are illicitly manufactured in the State of New York alone.—*Naval and Military Record*, 4 October, 1922.

ENGLISH ORDERS PLACED WITH KRUPP.—*The Matin*, Paris, reports from London that the Krupp factory at Essen has just received a large order from a firm in Glasgow for material to be used in ship construction. It is stated that the prices of the German firm were very much lower than those of English firms.

STATUS OF BRITISH AIRCRAFT CARRIER.—On August 9, 1922, the Marquess of Graham published a letter in the *Morning Post* in regard to battleships and aircraft. The substance of this letter was that the British Navy's great need at present was for airplane carriers, and he suggested that the Admiralty should build at once at least three large aircraft carriers, of lower freeboard than the *Argus* and with greater speed and other improvements, with at least thirty airplanes attached to each carrier, and with the whole complement in personnel—whether for air or sea service—belonging to the navy proper. After the airplane carriers to the above extent had been provided for, he said that post bellum battleships should then be built to suit the purse.

In reply to this letter, the naval correspondent of the *Morning Post* of August 11, 1922, published the following statement:

In view of the letter from the Marquess of Graham, published in these columns on Wednesday, it seems desirable to set forward the position in which the Royal Navy stands to-day in regard to aircraft carriers built and building.

Aircraft carriers are the only type of vessels, besides capital ships, the total tonnage of which is limited by the Washington Naval Treaty; it being laid down that the total tonnage for aircraft carriers of each of the contracting powers shall not exceed: United States and British Empire, 135,000 tons each; Japan, 81,000 tons; France and Italy, 60,000 tons each. Replacement of existing tonnage is also provided for, but with the special proviso that all aircraft carrier tonnage in existence or building on November 12, 1921, shall be considered experimental, and may be replaced, within the total tonnage limit prescribed, without regard to its age.

A further clause fixes the maximum displacement of any one aircraft carrier at 27,000 tons; but the contracting powers are permitted to convert ships which otherwise would be scrapped under the provisions of the treaty with aircraft carriers up to a tonnage of 33,000 tons for each ship so converted, without increase of total tonnage allowed. The United States is converting two of the six battle cruisers which are now building under this arrangement, the remaining four being scrapped.

All the aircraft carriers belonging to the Royal Navy, built and building, fall under the experimental category. There are completed and now in service the *Argus*, *Pegasus*, and *Ark Royal*; of which the first alone can be regarded as in any sense constituting an ocean-going aircraft carrier, the other two being makeshifts. Two carriers, *Eagle* and *Hermes*, are on the point of completion, and should be passed into service during the current financial year. The former is a convert battleship, the *Almirante Cochrane*, taken over by the Admiralty when in course of construction for the Chilean Government by Armstrong's. She is of 22,790 tons displacement, and has a speed of 24 knots. *Hermes* is a smaller type of vessel, specially designed by Sir E. Tennyson d'Eyncourt, and has a displacement of 11,000 tons, with a speed of 25 knots. Finally there is the *Furious*, originally a 31-knot cruiser of 19,000 tons, converted into an aircraft carrier during the war, in which rôle she did good service with the Grand Fleet in 1917-18. This vessel is now undergoing reconstruction at Devonport, a sum of £300,000 having been voted for that purpose in the navy estimates, 1922-23. She will not, however, be completed until 1923-24.

Aircraft carriers for service with the fleet are yet in their infancy. Much experiment and experience under all conditions to be met with at sea is necessary before the ideal carrier can be designed; although at present the British Navy is far in advance of any other navy in this respect. It would seem, therefore, that the Admiralty policy of experimenting mainly with converted vessels is the correct and most economical course to follow, having regard to the lead possessed in this type of vessel and the "experimental clause" of the naval treaty referred to above. To sink several millions prematurely in building new vessels which, when completed, would very probably not embody the features which progressive experiments would demonstrate were necessary, would handicap the Royal Navy during the whole period that the naval treaty remains in operation.

ROYAL NAVY POSTGRADUATE COURSE FOR OFFICERS.—At the present time the following courses are being conducted with the number of student officers noted:

1. *Specialist Courses.* These are for officers specializing in particular duties, viz.; Gunnery, Signals and Wireless Telegraphy, Navigation, and Engineering. The number of officers attending these courses is governed by the requirements each year. The length of the courses and the number for the present year are as follows:

Course	*Number*	*Remarks*
Gunnery	10	9 months preliminary course at R. N. College Greenwich
Torpedo	8	followed by 9 months in Gunnery or Torpedo School.
Signals and W/T	6	9 months course at Signal School, Portsmouth
Navigation	10	7 weeks course at the Navigation School, Portsmouth
Engineering	32	Two terms (about 6 months) at R. N. College, Greenwich followed by a course of about 18 months at R. N. Engineering College at Keyham.

II. Courses for Junior Executive Officers to qualify for the rank of Lieutenant.

	Length of course
Educational Course at R. N. College, Greenwich	6 months

	Length of course
Gunnery Course at Gunnery School, Portsmouth	12 weeks
Torpedo Course at Torpedo School, Portsmouth	6 weeks
Navigation Course at Navigation School, Portsmouth	6 weeks

All Executive Officers are required to take these courses soon after promotion to the rank of Acting Sub-Lieutenant.

LOSS OF BRITISH WAR VESSELS.—The destroyer *Speedy*, 1,087 tons, built by Thornycrofts and commissioned August, 1918, was lost in the Sea of Marmora on September 24, after a collision.

The British Admiralty has decided not to attempt to salvage H. M. S. *Raleigh* except for equipment readily removable.

BRITISH FLEET IN NEAR EAST.—Practically the entire Mediterranean Fleet has been concentrated in the area: Dardanelles, Sea of Marmora and Bosporus.

The following Naval units have been detached from the British Atlantic Fleet and ordered as reinforcements to the British Mediterranean Fleet:

First Battle Squadron

First Division	Second Division
Barham (Flag of V. A. C.)	*Revenge* (Flag of R. A.)
Madaya	*Ramillies*
Valiant	*Resolution*
Warspite	*Royal Oak*

Second Light Cruiser Squadron

Curacoa (flag)	*Cordelia*
Caledos	*Cambrian* has been ordered to join this squadron
Carysfort	
Castor	

Curacoa, Carysfort and *Cordelia* of this squadron are known to be in Turkish waters. The exact whereabouts of the *Caledon* and *Castor* are not known at the present time.

Second Destroyer Flotilla

Spencer (Flotilla leader)
Vanquisher
Vectis
Venetia
Viceroy
Violent
Viscount
Winchelsea
Wolfhound

Third Destroyer Flotilla

Campbell (Flotilla Leader)
Verity
Veteran
Wanderer
Wild Swan
Wishart
Witherington
Wivern
Wolverine
Aircraft Carrier *Ark Royal*
Aircraft Carrier *Argus*

Second Submarine Flotilla

Lucia (Depot ship)
Adamant
L.18
L.21
L.22
L.25
L.52
L.56
L.71

First Destroyer Flotilla

Wallace (Flotilla Leader)
Vancouver
Velox
Versatile
Vortigern
Walker
Warwick
Watchman
Whirlwind

The destroyers *Rigorous* and *Romola,* which were in reserve at Gibralter, have received full complements and have proceeded to Turkish waters.

The complements of the battleships *Centurion* and *Ajax* have been raised to full complements, and these vessels have proceeded to Turkish waters.

The light-cruiser *Ceres,* of the Mediterranean Fleet, has been recommissioned and has proceeded to Turkish waters.

The light-cruiser *Vindictive* has just arrived at Malta upon her third trooping trip. This vessel also carries certain aircraft.

The flagship of the British Atlantic Fleet, the *Queen Elizabeth,* is in the Firth of Forth.

The First Light Cruiser Squadron and the Fourth Destroyer Flotilla are just completing a special cruise in the Baltic and, as these are the only other light forces with full complements available, it is probable that they will be despatched to the Near East should the situation there become more serious. The cruise of these forces is in the nature of a diplomatic cruise, and it was therefore desirable to complete it if possible.

In accordance with the procedure in emergencies, the Admiralty has suspended publication of the movements of British vessels of war in the Mediterranean.

JAPAN

JAPAN'S NAVAL CONSTRUCTION PROGRAM.—Since we last wrote on the subject of Japanese naval policy there have been important developments which merit some further comment. In an article published on May 26, we renewed the principal modifications in the shipbuilding program

brought about by the Washington Treaty, and showed that economic necessity was compelling Japan to proceed with the construction of a fairly large number of so-called "auxiliary combatant craft," the aggregate tonnage of which is not restricted by the Treaty. The Imperial Navy Department in Tokyo has now issued a statement explanatory of its shipbuilding plans for the near future. According to this document, there is no truth in the reports circulated abroad, principally in the United States, that a large increase in the number of auxiliary vessels which had been authorized previous to the Conference is meditated. On the contrary, it is stated, the total is actually to be reduced by one cruiser, thirteen destroyers and twenty-four submarines, as compared with the original program of ships to be completed by the year 1927. At the same time, however, the designs of all remaining vessels have been re-drafted on the basis of greater dimensions and power, so that the deletion of the thirty-eight units enumerated signifies a reduction of only 13,935 tons in the total displacement of the pre-Conference program. It is clear from this that very large additions have been made to the displacement of the surviving vessels, which comprise the following: Four cruisers of 10,000 tons each; four cruisers of 7,000 tons each; twenty-four destroyers of the first class, with an aggregate of 33,000 tons; and twenty-four submarines, with a collective displacement of 28,166 tons. It is not stated which of these vessels, if any, have already been laid down, but in any case they are likely to be put in hand as soon as circumstances permit, since they are intended to provide the leading shipyards with employment in place of that which was lost through the cancelling of the capital ships. The four largest cruisers, it is surmised, will be distributed among the leading State and privately owned yards—Kure and Yokosuka in the former category and Kawasaki and Mitsubishi in the latter. One of the 7,000-ton ships may be built at Sasebo Arsenal and the other three by contract.*

Four of the new cruisers, it will be observed, are to be of the maximum displacement which the Washington Treaty specifies for ships of this type. They will therefore be the largest modern cruising ships to be found in any navy up to the present, surpassing our *Raleigh* class by 250 tons, and showing an excess of no less than 4,400 tons over the largest hitherto built in Japan. As they are expected to embody very high speed, a large fuel capacity, special features of protection, and a main armament of the heaviest caliber permitted by the Treaty, viz., 8-in. guns, particulars of their design will be awaited with more than ordinary interest. As regards the 7,000-ton cruisers, at least one vessel of this displacement is known to have been laid down recently, and it is probable, though not certain, that this ship is included in the quartet embraced by the modified program. As will appear later, Japanese constructors have been singularly successful with their recent light cruiser designs, which compare very favorably with the best cruising ships now under foreign flags. A total of 33,000 tons for the twenty-four new destroyers gives an average of approximately 1,375 tons per boat, as compared with the 1,345 tons of the latest first-class Japanese destroyers to be completed. The lower figure corresponds more or less to the displacement of our *Admiralty V.* class, which have machinery of 27,000 shaft horsepower for a speed of 34 knots. The Japanese 1,345-ton boats, however, are credited with 38,500 shaft horsepower, or only 1,500 units less than our *Admiralty* type flotilla leaders, which displace 1,800 tons. Evidently, therefore, the new Japanese destroyers are capable of developing very high speeds. The first-class boats are now armed with four 4.7-in. guns, two anti-aircraft machine-guns, and

*Since the above was written a despatch from Tokyo, dated August 19, states that the construction of two 7,500-ton cruisers will be begun shortly. They are to be named respectively *Kinugasa* and *Furutori*.

six torpedo tubes, but in the latest design a fifth 4.7-in. gun is said to be provided for.

Turning to the submarines of the amended program, the average displacement of the twenty-four new boats works out at 1,173 tons, but it is not expected that the entire group will be of uniform design. As far back as 1920, Japanese plans were got out for several types of large cruising submersibles, ranging in surface displacement from 1,500 to 2,500 tons, with a maximum speed of 18 knots, and in the course of last year the first 1,500-ton boats were laid down. Their displacement is almost double that of the earlier boats, which are 740 tons in surface trim and 1,100 submerged. Problems of submarine design receive the most careful attention in Japan, where a continuous effort is made to assimilate the best features of foreign, including German, construction into the basic design which has been evolved to meet special Japanese requirements. So far as can be ascertained, the manufacture of large-powered Diesel engines for submarine propulsion is still imposing a severe strain on the national industry, and it has been found necessary to enlist the aid of both British and continental firms to meet the demand for such machinery. Details of these orders are not yet available, but it is understood that the first boats of the new 1,500-ton type will be equipped with Diesel engines of European manufacture. In all other respects, however, the modern Japanese submarine is of purely national conception. It differs from the prevailing foreign types by reason of its large reserve of buoyancy, which is nearly fifty per cent. This is in accordance with German practice, while contemporary boats of British, American, and French designs have a much smaller reserve of buoyancy. The inner hull of the Japanese boat is small, but it is enclosed in a very large outer hull, with the result that the interskin spaces are exceptionally large. By this system the water ballast tanks and the oil storage spaces are considerably enlarged, the margin of safety is increased and the cruising endurance prolonged. In the opinion of Japanese naval officers, their submarines, though perhaps rather less speedy than foreign boats of similar tonnage, are better adapted to general war service, especially in the waters of the Pacific Ocean.

The exact number of submarines completed, built and projected for the Japanese Navy cannot be stated with certainty, information on this point being vague and contradictory. Taking sixty as the number of the last boat authorized before the modified program was adopted, and adding the twenty-four new boats specified in that measure, we obtain a gross total of eighty-four submarines. This, however, includes thirteen early boats which are too small to be effective outside coastal waters, and should therefore be omitted from any estimate of strength in ocean-going craft. The total is thus reduced to seventy-one boats, as compared with the fifty-eight boats of which the British submarine flotilla will consist when the deletions ordered by the Admiralty during the current financial year have been made. The American total is very much larger, but will be found on analysis to include a great number of boats of small tonnage and restricted endurance. Of large ocean-going submarines, comparable with those now built or being built for Japan, the United States has only fifty-six completed or building. It will thus be seen that Japan is in a far stronger and better position with regard to submarine strength than a cursory glance at the comparative tables would suggest.

Special interest attaches to the battleship *Mutsu*, which formed the subject of so much discussion at the Washington Conference. It will be recalled that under the original American scheme of limitation, this vessel was to be scrapped, a proposal to which the Japanese delegates took strong exception, mainly on the ground that she was practically completed before

the Conference met. After weeks of debate, it was finally agreed that the *Mutsu* should be retained, corresponding adjustments being made in the ratios of capital ship tonnage allotted to Japan, the United States and the British Empire respectively. As a result of this compromise, Great Britain was empowered to lay down two new 35,000-ton battleships. It will therefore be seen that Japan's successful claim to keep the *Mutsu* had far-reaching effects. Until our new vessels are afloat, this ship and her sister, the *Nagato*, will continue to represent the heaviest type of battleship in the world, though their individual displacement is 7,400 tons less than that of the British battle cruiser *Hood*. Laid down at Yokosuka Dockyard on June 1, 1918, the *Mutsu* was launched on May 31, 1920, and went into commission during December, 1921. Her leading characteristics are: Length between perpendiculars, 660ft. 7in.; length over all, 698ft. 6in.; breadth, 95ft.; mean draught of water, 30ft.; displacement, 33,800 tons. The lines of the hull, moulded with an eye to speed, are somewhat finer than those of the latest foreign battleships. There is no external bulge, but an elaborate system of subdivision in association with armored bulkheads placed well back from the outer plating is believed by her designers to make the ship reasonably invulnerable to under-water attack. The motive power is supplied by geared turbines of 46,000 shaft horsepower. There is no definite information as to the number or type of the boilers. The speed of the *Mutsu* on the measured mile is returned as 23.4 knots, but the ship is said to have attained higher speeds than this in her full-power endurance trials.

As it is not the custom of the Japanese authorities to disclose details of armor protection in their modern ships, the thickness of the *Mutsu's* side, deck and turret armor can only be surmised, but according to the percentage of other weights to total displacement, it would appear to be very massive. The main armament consists of eight 16-in. 45-caliber guns, mounted in four turrets on the center line of the ships. These weapons were constructed at the Muroran Ironworks, and the breech mechanism at Kure Arsenal. Each gun weighs 112 tons unmounted, and throws a projectile of about 2,200 lbs. The mountings permit an elevation up to twenty-five degrees or thirty degrees. Twenty 5.5-in. quick-firing guns are disposed in casemates, the position of the secondary armament being clearly visible in the illustration. There are besides four 12-pounder anti-aircraft guns, four above-water torpedo tubes, and four submerged tubes. As in the *Nagato*, the foremast is a gigantic heptapod structure, supporting searchlight platforms, control tops, and director towers for the main and secondary armament. Great rigidity is claimed for this form of mast, as well as immunity from destruction by shell fire; but the weight involved must be serious, and the large area of target it offers is a further drawback. The opening visible at the stern of the ship leads out of the admiral's quarters, and presumably takes the place of the overhanging stern-walk fitted in some earlier ships, which was liable to be flooded in heavy weather or when the ship was steaming at full speed. With the commissioning of the *Mutsu*, Japanese capital ship construction is to be suspended for a term of ten years, conformably with the Limitation Treaty. The 40,100-ton battleships *Kaga* and *Tosa* launched last year are to be used as target ships and eventually broken up; while the battle cruisers *Amagi* and *Akagi*, still on the stocks, have been re-designed as aircraft carriers, each displacing 26,000 tons.

The light cruiser *Oh-i* is one of a very numerous class of ships which have proved an unqualified success. Her sister vessels are the *Kuma*, *Tama*, *Kitakami*, *Kiso*, *Nagara*, and with slight modifications, the *Natori*, *Isudzu*, *Yura*, *Kinu*, *Ayase*, *Otonase*, *Minase*, *Abukuma*. The *Oh-i* herself was begun at the Kawasaki Yard, Kobe, in November, 1919, launched the

following July, and completed last autumn. The first ships of the class were begun in 1918, and the last unit, *Abukuma*, is still on the stocks. The principal dimensisons of *Oh-i* are as follows: Length between perpendiculars, 500ft.; length over all, 535ft.; breadth, 46ft. 9in.; mean draught of water, 15ft. 9in.; normal displacement, 5,500 tons. She has geared turbines of Parsons type, taking steam from fourteen boilers, mainly oil-fired, and developing 90,000 shaft horsepower. We understand that the designed speed of 33 knots has been exceeded by every ship of this class which has hitherto made her trials, and that in at least one case the remarkable velocity of 34 knots was achieved. This is easily a world's record for light cruiser speed, and one that reflects the utmost credit on Japanese engineers and engineering. Our own light cruisers of the *E* class, of 7,600 tons, are expected to develop 80,000 shaft horsepower, equivalent to 33 knots when in light condition, and the American *Omahas*, of 7,500 tons, are designed for 90,000 shaft horsepower and 33.7 knots; but meanwhile the Japanese ships have actually exceeded both these velocities. The *Oh-i* and others of her type are protected by a partial belt of high-tensile steel, reinforced by an armo deck, 2½in. thick at the extremities. They are armed with seven 5.5in. quick-firing guns, throwing an 82 lb. shell. Two of these pieces are placed tandem-wise on the forecastle, one is on each beam abreast the foremast, and the remaining three are on the center line in the after part of the ship. While this disposition limits the direct-ahead fire to three guns and the stern fire to one gun, on the other hand, it permits of a powerful concentration of fire on the bow or quarter, and the fact that it has been adhered to in so many ships is evidence of its tactical advantages. There are eight 21in. deck torpedo tubes mounted in pairs, two on each side at the break of the forecastle, and two in similar positions abaft the aftermost funnel. Two 12-pounder guns are carried for aircraft attack. As will be seen from the illustration, all the guns have an excellent command, thanks to the high freeboard of the ship and the mounting of the after weapons on the superstructure deck.

These light cruisers are reported to be splendid seaboats, and able to work their armament with effect in conditions of weather which would severely handicap low-lying craft, such as our *C* and *D* vessels. A squadron consisting of the *Oh-i*, *Kiso*, *Kitakami*, and *Tama*, escorted the Prince of Wales in H.M.S. *Renown* from Hong Kong to Yokohama, and their admirable behavior in the heavy weather which was encountered during the passage was observed with great interest from the British ship. According to the Admiralty *Return*, mentioned above, Japan now has twenty-five effective light cruisers built and building, all but four of which date from 1918. If, therefore, the eight ships of the post-Conference program are all additional to these, the establishment will eventually reach thirty-three ships or, deducting the four older vessels, twenty-nine light cruisers, the slowest of which has a trial speed of 33 knots. Unless present programs are considerably amplified, no other navy will be able to match this remarkable fleet of cruising ships.

Steady progress continues to be made in the development of the destroyer flotillas. At the beginning of the year the effective boats in service numbered fifty-nine, the majority of which are of post-war design; and twenty-eight were under construction. As a number of additional boats have been commenced during the year, the present position is approximately as follows: Built, sixty-five; being built, thirty. To these must be added the twenty-four destroyers to be laid down in accordance with the amended program, the completion of which will bring the establishment up to fifty-five first-class boats and fifty-six second-class, the former with displacements ranging from 1,085 to 1,400 tons, and the latter from 600 to 850 tons. As in all other types of warships recently designed in Japan,

the new destroyers exhibit a high degree of tactical efficiency in proportion to their size. The latest design of which we have cognizance is that of the *Shiokaze* class, launched in 1920, and to which belongs the *Hakaze*. The chief dimensions of this class are: Length between perpendiculars, 320ft.; length over all, 336½ft.; breadth, 29¼ft.; mean draught of water, 9½ft. Machinery: General turbines drawing steam from four oil-fired boilers, and developing 38,500 shaft horsepower for a speed of 34 knots. The armament comprises four 4.7-in. 45-pounder quick-firing guns, two anti-aircraft "pom-poms," and six 21-in. torpedo tubes mounted in pairs. In the later boats, it is anticipated, the extra displacement will be utilized to increase the fuel capacity, and the gun armament may be strengthened. The *Ashi* was launched in September, 1921, and commissioned about four months ago. She is 275½ft. long between perpendiculars, 26ft. broad and draws 8ft. of water at the normal displacement of 850 tons. Her machinery consists of turbines, apparently without gearing, and three oil-fired boilers. On trial, the *Ashi* developed considerably more than the 21,000 shaft horsepower stipulated in the contract, and bettered her designed speed of 31.5 knots by nearly 2 knots. She carries three 4.7-in. guns, two anti-aircraft machine guns, and four 21-in. torpedo tubes. It is evidently the intention to discontinue the building of second-class boats in future, as the whole of the destroyers to be laid down under the new program are of the first-class type.

Submarine *No. 23* is a "medium ocean-going" boat, completed late in 1920. Her displacement in surface trim is 740 tons, increased to 1,100 tons when submerged. The Diesel engines for surface propulsion develop 2,600 brake horsepower, and the electric motors for submerged running work up to 1,200 horsepower. The highest surface speed is not over 16 knots. Sufficient oil is carried for a radius of 6,500 sea miles. Two torpedo tubes are fitted in the bows and two in the stern. A short 12-pounder anti-aircraft gun is mounted abaft the conning tower. *The Engineer*, 6 October, 1922.

JAPAN BEGINS CUT IN YARD FORCE.—Washington, October 11.—Discharge of 6,000 Japanese navy yard workers, as beginning of the naval reduction program agreed upon at the Washington Arms Conference, was announced today in official advices to the Japanese Embassy. The step, taken in advance of an exchange of ratifications of the naval limitation treaty, was regarded here as reflecting the confidence of Japanese statesmen in the eventual acceptance of the pact by all the signatories.—*Baltimore Sun*, 12 October, 1922.

UNITED STATES

VESSELS UNDER CONSTRUCTION UNITED STATES NAVY—Progress as of September 30, 1922

Type Number and Name	Contractor	Per Cent of Completion				Contract date of Completion	Probable date of Completion
		October 1, 1922		September 1, 1922			
		Total	On Ship	Total	On Ship		
BATTLESHIPS (BB)							
45 *Colorado*	New York S.B. Cpn.	93.9	93.8	93.5	93.3	.....	7/ 1/23
47 *Washington*	New York S.B. Cpn.	.....	.....	.....	.....	.....	Suspended
48 *West Virginia*	Newport News S.B. & D. D. Co.	85.2	84.1	84.4	83.3	.....	9/ 1/23
49 *South Dakota*	New York Navy Yard	.....	.....	.....	.....	.....	Suspended
50 *Indiana*	New York Navy Yd.	.....	.....	.....	.....	.....	Suspended
51 *Montana*	Mare Island Nvy. Yd.	.....	.....	.....	.....	.....	Suspended
52 *North Carolina*	Norfolk Navy Yard	.....	.....	.....	.....	.....	Suspended
53 *Iowa*	Newport News S.B. & D. D. Co.	.....	.....	.....	.....	7/12/23	Suspended
54 *Massachusetts*	Beth. S.B. Cpn. (Fore River)	.....	.....	.....	.....	7/12/23	Suspended
BATTLE CRUISERS (CC)							
1 *Lexington*	Beth. S.B. Cpn. (Fore River)	33.8	24.2	33.8	24.2	.....	Indefinite
2 *Constellation*	Newport News S.B. & D. D. Co.	.....	.....	.....	.....	.....	Suspended
3 *Saratoga*	New York S.B. Cpn.	35.4	28.	35.4	28.	.....	Indefinite
4 *Ranger*	Newport News S.B. & D. D. Co.	.....	.....	.....	.....	.....	Suspende
5 *Constitution*	Philadelphia Nvy. Yd.	.....	.....	.....	.....	.....	Suspende
6 *United States*	Philadelphia Nvy. Yd.	.....	.....	.....	.....	.....	Suspende
SCOUT CRUISERS (LIGHT CRUISERS) (CL)							
4 *Omaha*	Todd D.D. & Const. Cpn.	99.2	96.6	99.2	95.9	8/ 1/21	1/ 2/23
5 *Milwaukee*	ditto	96.3	93.3	95.9	92.9	12/1/21	3/ 1/23
6 *Cincinnati*	ditto	88.2	84.9	88.2	84.5	7/ 1/22	7/ 1/23
7 *Raleigh*	Beth. S.B. Cpn. (Fore River)	75.7	61.9	73.3	59.1	8/ 1/21	Indefinite
8 *Detroit*	ditto	93.8	87.6	92.1	85.4	11/1/21	2/15/23
9 *Richmond*	Wm. Cramp & Sons Co.	95.7	92.	95.	90.5	.....	2/15/23
10 *Concord*	ditto	86.5	83.5	88.5	82.	.....	5/ 1/23
11 *Trenton*	ditto	63.	52.	61.	49.	10/1/21	Indefinite
12 *Marblehead*	ditto	49.5	36.	48.	34.5	1/ 1/22	Indefinite
13 *Memphis*	ditto	42.	28.	41.	27.	4/ 1/22	Indefinite
AUXILIARIES							
Repair Ship No. 1, *Medusa* (AR1)	Puget Sd. Nvy. Yd.	86.7	78.8	85.8	76.9	.....	Indefinite
Dest. Tender No. 3 *Dobbin* (AD3)	Phila. Nvy. Yd.	74.5	74.3	74.	73.8	.....	Indefinite
Dest. Tender No. 4 *Whitney* (AD4)	Boston Nvy. Yd.	63.2	54.5	62.3	53.6	.....	Indefinite
Sub. Tender No. 3 *Holland* (AS3)	Puget Sd. Nvy. Yd.	21.5	5.5	21.5	5.5	.....	Indefinite
PATROL VESSELS							
Gunboat No. 22, *Tulsa* (PG22)	Charleston Nvy. Yd.	78.5	69.3	77.2	67.4	.....	Indefinite

Destroyers authorized but not under construction or contract.
(12) Nos. 348 to 359 inclusive.

Type Number and Name	Contractor	Per Cent of Completion				Contract date of Completion	Probable date of Completion
		October 1, 1922		September 1, 1922			
		Total	On Ship	Total	On Ship		
SUBMARINES							
115 *S-10*	Portsmouth N.H. Nvy. Yd. Comm. 9/21/22			97.6	97.4		
116 *S-11*	ditto	95.6	95.2	95.	94.4		Indefinite
117 *S-12*	ditto	95.3	94.9	94.7	94.3		Indefinite
118 *S-13*	ditto	93.8	91.8	93.2	91.4		Indefinite
123 *S-18*	Elec. Boat Co. (Quincy)	98.6	98.6	98.6	98.6	7/ 1/22	
124 *S-19*	ditto	98.4	98.4	98.4	98.4	9/30/22	
125 *S-20*	ditto	98.8	98.8	98.7	98.7	10/30/22	
126 *S-21*	ditto	98.2	98.2	98.1	98.1	10/30/22	
127 *S-22*	ditto	98.6	98.6	98.6	98.6	10/30/22	
128 *S-23*	ditto	98.5	98.5	98.5	98.5	11/30/22	
129 *S-24*	ditto	97.9*	97.9	97.9	97.9	11/30/22	
130 *S-25*	ditto	98.	98.	98.	98.	11/30/22	
131 *S-26*	ditto	97.5	97.5	96.5	96.5	12/30/22	
132 *S-27*	ditto	94.	94.	93.	92.7	12/30/22	
133 *S-28*	ditto	96.8	96.8	93.6	93.4	12/30/22	
134 *S-29*	ditto	93.1	92.9	92.4	92.	1/30/23	
X135 *S-30*	Elec. Boat Co. (San Fran)					1/30/23	
X136 *S-31*	ditto					1/30/23	
X137 *S-32*	ditto					2/28/23	
Z138 *S-33*	ditto					2/28/23	
Z139 *S-34*	ditto					2/28/23	
Z140 *S-35*	ditto			99.5	99.5	3/30/23	
141 *S-36*	ditto	95.8	95.2	95.1	94.4	9/20/22	12/15/22
142 *S-37*	ditto	94.2	93.4	94.	93.1	10/10/22	2/ 1/23
143 *S-38*	ditto	91.	89.4	90.5	88.8	10/30/22	1/15/23
144 *S-39*	ditto	87.7	85.3	87.6	85.2	11/19/22	3/ 1/23
145 *S-40*	ditto	85.4	82.5	85.3	82.4	12/ 9/22	4/ 2/23
146 *S-41*	ditto	87.6	85.2	87.5	85.1	12/29/22	5/ 1/23
153 *S-42*	Elec. Boat Co. (Quincy)	89.9	80.6	89.1	79.4	5/15/23	
154 *S-43*	ditto	90.8	82.3	90.1	81.2	6/15/23	
155 *S-44*	ditto	88.	77.7	87.6	77.3	6/15/23	
156 *S-45*	ditto	88.8	78.8	88.4	78.4	7/15/23	
157 *S-46*	ditto	87.3	76.7	86.9	76.3	7/15/23	
158 *S-47*	ditto	86.9	76.1	86.5	75.7	8/15/23	
159 *S-48*	Lake T.B. Co. (Bridgeport)	99.5	99.5	99.	99.	7/ 1/21	10/23/22
FLEET SUBMARINES							
163 *V-1 (SF4)*	Portsmouth N.H. Nvy Yd	30.3	29.4	28.9	27.9		10 /24
164 *V-2 (SF5)*	ditto	27.4		26.8			
165 *V-3 (SF6)*	ditto	27.4		26.8			

Note: Submarines authorized but not under construction or contract: Fleet Submarines (6) Nos. 166-171. Neff Submarine (1) No. 108.

Z Hull complete. Engineering work only.

X Hull complete. Engineering work being completed at Groton, Conn.

OUR NAVAL SITUATION.—Our Naval situation may be discussed at length or in brief under the following four general heads:

I. Accomplishments of the Conference on Limitation of Armaments

The United States made by far the greatest sacrifice in order to establish the principle of Limitation of Armaments by International Agreement. The United States scrapped battleships on which it had already spent one-third of a billion dollars and which, when completed, would have given us undisputed naval supremacy. We recommended limitation in all classes of fighting craft, but agreement could only be reached on capital ships and air-plane carriers.

We agreed not to establish naval bases in the Western Pacific, thereby reducing our potential power in that locality to a negligible amount.

Competition has not ceased in the increase of matériel, its design, or in the sufficiency of efficiency of personnel. Whether or not it will be possible to extend the principle of Limitation of Armaments by Inter-

national Agreement to include all fighting craft, the future alone can tell. Probably the best article on the accomplishments of the Conference is embodied in the address of Rear Admiral H. S. Knapp, delivered on April 27, 1922, before the American Society of International Law and published in their proceedings for that year.

The Navy Department approves in full of any reasonable plan to limit armaments by international agreement, as relative strength within limits is a vital factor. It should not be overlooked, however, that sea-power is measured by three factors: (1) Navy or combat strength, (2) Naval and Commercial Bases, and (3) Merchant Marine; and to these might well be added Radio and Cable Communications.

In connection with this subject: the recent book written by Captain Knox might be read for more complete information. This book is entitled *The Eclipse of American Sea Power*, and is published by the *Army and Navy Journal*.

II. The Need of the Navy

An adequate navy is necessary in order that we may exert our influence effectively for the general good; secure and maintain our national policies; protect our own interests; insure our future prosperity and maintain our security as a nation. Our foreign policy is as strong as our navy and no stronger. A nation with little physical power has small weight in the council of nations and is given little consideration, even in regard to her own rights, and can certainly exert no influence for the rights of others.

Under this general head might be included the value of our navy in its aid to industry and commerce. At the present time a pamphlet is being prepared in the Navy Department with data obtained from all Bureaus regarding this subject.

The part the navy has played in all great wars has largely been overlooked. It can be given as an almost invariable rule that ultimate success in war lies with the power that controls the sea, having the resources of the world at its disposal and strangling its opponents by blockades.

Captain Overstreet has an excellent article in *The Outlook* of October 12, 1922, "Will Total Disarmament Prevent War?" In this connection it may be pointed out that if navies are reduced in size, the Merchant Marine is of increasing value for war purposes. With no regular fighting craft, the navies of the world would be their Merchant Marine.

This subject can be expanded indefinitely through a study of Mahan, Upton's *Military Policy of the United States*, and other books on similar lines. Upton's *Military Policy of the United States* does not deal very much with the navy, but does deal with questions of preparedness and "the cost of unpreparedness."

III. The Cost of the Navy

About eight per cent of the Federal revenue is spent on the navy. The Federal revenue is about one-third of the total taxes. Therefore about two and one-half per cent of the average total per capita taxes goes to the navy. The Federal taxes are not as evenly distributed as local taxes. Those who pay little or no income taxes are taxed little or nothing for the Federal Government, and consequently for the navy. The average per capita tax for the navy is three dollars. In the agricultural districts, where the navy is most opposed, the average per capita is about twenty-five cents.

The cost of the navy should not be confounded with the cost of past wars, which cost is in great part due to unpreparedness. Even leaving aside the risks we have run in the past and the unnecessary loss of life, from a financial standpoint only, the cost of unpreparedness has been far greater than the actual cost of wars, with adequate preparedness; and with

adequate preparedness, some of these wars could have been avoided and the others very much shortened.

The cost of the navy during peace is in great part repaid by its aid to industry and commerce.

The cost of the navy may be put on an insurance basis. Our exports are about six billion dollars a year, half of this being agricultural products. About two and one-quarter billion dollars a year are expended on private insurance policies. One-sixth of this amount if for National Insurance only would not be excessive.

There are those who maintain that the expenditures of the navy should be to a great extent given to schools; that the Federal Government spends very little on schools. In this connection it should be pointed out that education is not a function of the Federal Government, but is a function of local government; and that over one billion dollars in taxes are now spent by the people on schools. Whether or not this amount should be increased is subject to local decision. In the preamble of the Constitution are the words, "Provide for the common defense." This is a Federal function and its most important function.

IV. What Our Naval Policy Should Be

The discussion of this subject was in order before we ratified the Naval Treaty. It is hardly in order now even to discuss the subject. Our policy under the Treaty can be nothing other than to maintain a navy on a parity with Great Britain and five-thirds that of Japan in Regular personnel, Naval Reserves and fighting craft of every kind.

To maintain this policy we must maintain in full commission all battleships retained under the Treaty; we must build airplane carriers up to the Treaty limit; we must build cruisers to maintain our five in the 5-5-3 ratio, which means at the present time we should immediately have under construction twenty-two 10,000-ton cruisers; we must maintain our submarine strength, especially in fleet submarines of long radius. In this special type of submarines we are behind our ratio.

In destroyers we are ahead of our ratio, but have lost this advantage by having about two-thirds of them out of commission. It is an advantage to be ahead in any type, but destroyers cannot replace cruisers. We have no destroyer leaders.

To maintain this policy in personnel we require personnel equal to Great Britain and five-thirds times the number maintained in Japan.

It is difficult to make a direct comparison of personnel with Great Britain, for in their estimates they appropriate under fifteen different "votes." In "votes" one, appropriation is made for 88,805 men for the fleet; this does not include a large number of Reserves used constantly on fleet auxiliaries; the navy's quota of the Air Service; men on shore; men on service under Dominion and foreign governments; men in the Colonial Navy. We do not man our navy in part with reserves; we include our Air Force, recruits in training on shore, men at trade schools, recruiting stations, radio and compass stations, and other necessary military activities. On a conservative basis, to place our naval personnel on a substantial parity with that of the British Navy, we should appropriate for about 120,000 men.

Japan has a total enlisted personnel of 73,000 men. If we maintain our 5-3 ratio, we require five-thirds times 73,000, or about 122,000 men. We have a total of 86,000 men.

In time of war all navies are greatly expanded. We must make it an important part of our policy to organize and maintain a sufficient and efficient Naval Reserve.—*Department News Bulletin.*

NAVAL MISSION TO BRAZIL.—The U. S. Naval Mission to Brazil under Admiral Vogelgesang, is attracting international attention.

A correspondent of the London *Times* views the affair with alarm and delares that "it foreshadows the eclipse of the ancient British prestige and influence in the Brazilian navy." He goes on to say, "As the result of British pre-occupation during and since the war, the Americans have been left practically a free field in Brazilian naval affairs, of which they have not been slow to take advantage. The infiltration of American ideas among the younger Brazilian naval officers has been steady and progressive, and has been aided by the American aviation and staff instructors contracted during the latter part of the war, as well as by proper naval representation attached to the American Embassy. In contrast to this, British official interests have been confided to a naval attaché of junior rank, whose duties were not confined to Brazil, but extended to the Argentine and Uruguay, with headquarters in Buenos Aires, and whose visits to Rio de Janeiro have been infrequent and hasty."—*Our Navy*, 7 October, 1922.

CHILE

THE CHILEAN NAVY.—By decree of August 3, 1922, the following ships have been placed in ordinary: *O'Higgins, Captain Prat, Esmeralda, Blanco Encalada.*

This leaves in active commission, forming the active Fleet:

Dreadnaught	*Latorre*
Cruiser	*Chacabuco*
Destroyers	*Lynch*
	Condell
	Uribe
	Williams
	Riveros

The only other ships in commission are the:

Submersible	*H-1*	
Cruiser	*Ministro*	—On Hydrographic work
	Zenteno	in Straits of Magellan
Transports	*Baquedano*	—On a practice cruise
	Angamos	off the Chilean Coast

MERCHANT MARINE

USE OF OIL FUEL GROWING RAPIDLY.—The fitting of an increasing proportion of the world's tonnage to use oil continues unabated. The percentage of the total tonnage thus equipped has risen from 3.09 per cent in 1914, to 24.69 per cent at the present time. This change has been occasioned by two conditions.

These are the conversion of coal-burning vessels to an oil-burning basis and the construction of motor or Diesel driven vessels. The adoption of the internal combustion or Diesel type of propulsive equipment is just beginning to assume important proportions in the United States; but in Great Britain and the continent of Europe this phase of the development has been and is making rapid strides.

The motor-equipped ship has unquestionably a strong advantage in economy over oil-fired steam-equipped vessels; but it is anticipated that the change from coal to oil, as applying on the world's shipping, will be greater through the intermediate stage of oil-fired steam vessels. These should create a requirement of at least 10,000,000 barrels of fuel oil for each million tons of shipping, using oil as fuel. Practically all of the vessels in operation by the United States Shipping Board and under private American

ownership are substantially on an oil-burning basis, there being 49.4 per cent of these ships exclusively oil burners, 23.3 per cent coal burners, and 27.3 per cent convertible to burn either coal or oil.

In the use of fuel oil on board vessels, there are many economical features involved which would make the continuance of the use of oil as a fuel for maritime purposes of the greatest importance and which can be briefly summarized as follows:

(1) More economical operation and reduced crews.

(2) Greater cargo capacity of the vessel on account of its ability to carry oil in compartments not otherwise available for cargo, such as double bottoms, peak tanks, etc.

(3) Ability of vessel's propulsive equipment to render more continuous service, steady steaming and uniform speed, thereby tending to more efficient operation.

(4) Lessened wear and tear on vessel's equipment, machinery, boilers and reduced cost of upkeep.

(5) Less frequent painting.

(6) Preserving effect of oil on vessel's bottom, it being rarely necessary to undertake the most expensive item of renewing tank tops in oil-burning vessels.

Were the 55,000,000 tons of world's powered ocean shipping to be converted to an oil-burning basis, it would consume annually over 500,000,000 barrels of oil, which represents nearly the total quantity of petroleum produced in the world today. While this consumption could, of course, be somewhat reduced by a more universal adoption of Diesel engines, it would, nevertheless, be of huge proportions.—*Nautical Gazette*, 7 October, 1922.

MOTOR SHIPS SUPPLANTING STEAMSHIPS.—In spite of the severe shipping depression, motor-ship tonnage (full-powered ships 2,000 gross tons or over) increased thirty-seven per cent in the year ended June 30, 1922, as against a gain of only four per cent for steam tonnage exclusive of motor ships, according to an analysis of shipping by the transportation division of the Department of Commerce.

On June 30, 1921, there were 145 motor ships of 2,000 gross tons or over, aggregating 692,000 gross tons; on the same date this year there were 186, totaling 946,000.

The United Kingdom continues to lead with 36,000 tons, an increase of twenty-four per cent. Sweden registered a large percentage gain, but continues in third place. Norway has displaced the United States as fourth on the list. Germany which did not have enough motor-ship tonnage to appear separately in the list last year, has seven vessels aggregating 32,083 tons this year. Danzig has two ships of 12,078 tons; one of these is the *Zoppot* of 9,932 tons, one of the largest tankers in the world.

The above totals are for what may be termed seagoing ships. In addition to these are 605 vessels under 2,000 tons each, aggregating 234,325 tons, equipped with Diesel engines. Last year on the same date there were 553 vessels of this kind, totaling 216,110 tons.

The chief engineer of one of the largest British shipyards stated two years ago that he saw a promising future for sailing ships with auxiliary Diesel engine power. This kind of tonnage has increased from forty-five ships, totaling 13,000 tons on June 30, 1915, to 777 of 342,530 tons in 1921, and to 870 of 353,181 tons in 1922. The United States holds the lead in this kind of tonnage, with fifty-four ships aggregating 50,957 tons.

CONVERSION OF GOVERNMENT CARGO CARRIERS INTO DIESEL ENGINED SHIPS.—As announced in our issue of last week, the Shipping Board has

not received a single application thus far for an advance from its Construction Loan Fund, which at the present time amounts to $25,000,000 and can be availed of by reputable American shipping concerns desirous of constructing vessels of the best and most efficient type. In view of the low ocean freights now prevailing and the depressed state of the shipping industry, this outcome is not to be wondered at. When so shrewd a vessel owner as Sir William Raeburn concedes that high-class British tramp vessels can only be operated at a loss at this juncture, it is not at all surprising that American shipowners, whose operating costs are certainly on a parity with if not higher than those prevailing on British flagships, should be disinclined to invest money in new tonnage for which no employment could be found.

While the American merchant marine has certain operating handicaps to contend with, it possesses a far larger proportion of oil-burning and recently constructed vessels than any of its principal maritime competitors. With four-fifths of our shipping adapted to the burning of oil fuel and five-eighths less than five years of age, we can rightfully boast of having the youngest and most modern merchant fleet. But although we now lead in these two particulars, we shall lose this advantage in time if we rest content with our past achievements in the ship-building line. In the opinion of the best shipping experts, modern and up-to-date cargo steamers such as we possess are bound to be superseded before a great number of years by Diesel engined freighters whose operating costs are so much lower than those of similar steam-propelled craft. Astonishing as the statement may appear, not a single motorship has been laid up for lack of profitable employment during the past eighteen months, whereas hundreds of the best type of cargo carriers have had to be tied up for this reason. In the light of this experience it is clear that the nation which has the largest percentage of internal combustion ships is going to outdistance all others as a carrier of ocean cargoes. Instead of holding our own in this respect, however, we are trailing behind the United Kingdom, Denmark, Sweden and Norway in the amount of ocean-going motorship tonnage owned, while of the 103 motorships of 251,328 gross tons building in the world's shipyards at the end of June, only three of 9,298 tons were completing in United States yards.

Unless this country keeps abreast of the times by embarking on the construction of motorships on a considerable scale it will assuredly drop behind in the race for maritime supremacy.—*Nautical Gazette*, 7 October, 1922.

EFFECT OF PROHIBITION RULING.—Attorney General Daugherty's ruling is bound to prove very detrimental to our merchant marine, which has already so many obstacles to contend with. It will prevent the chartering of American passenger carriers for round-the-world or other pleasure cruises and deflect traffic from them by causing European bound voyagers from South America or the Far East to proceed to their destination direct instead of traveling via one of our ports. The manning of our coal-burning ships will be made difficult as Spaniards and other aliens, who form a large proportion of the stokers employed on American flag vessels, will certainly prefer employment on foreign steamers where they will not have to forego their daily wine ration. Our freighters will be forced out of the West Indian trade, where rum forms a portion of every mixed cargo and American tramp steamers debarred from transporting liquors will be less eligible for general chartering purposes than alien vessels. In the absence of an international agreement prohibiting the transportation of alcoholic beverages on all merchantmen, our shipping will be at a serious disadvantage in competing for the world's carrying trade if the

present regulations remain unmodified. Congress should recognize this fact and promptly pass remedial legislation if it desires our flag to hold its place on the sea.—*Nautical Gazette*, 14 October, 1922.

THE HAMBURG-AMERICAN LINE.—German shipping journals report that the present fleet of the Hamburg-American Line consists of forty-three steamers of a total tonnage of 165,707. 198,692 R. T. are under construction.

On September 4 the Hamburg-American Line re-opened its regular monthly service between Plymouth—Cuba—Mexico.

The *Cape Norte*, the new 13,502 T. steamship recently built by the Vulkan Werft in Hamburg, for the Hamburg-Süd-Amerikanische-Dampfschiffahrtsgesellschaft, makes its maiden voyage on September 14. The other two steamships of this company, the *Cap Polonio* and the *Antonio Delfino* are also in the South American service and form the quickest connection between Germany and Brazil, Uruguay, Argentine and Chili.

GERMAN MERCHANT MARINE PERSONNEL.—German shipping journals report that in the German Merchant Marine on ships of over 100 R. T. there are 2,367 captains and other officers; 1,087 engineers and machinists and 12,348 men. It is claimed that these figures represent about one fifth of the pre-war personnel.

FRENCH STEAMSHIP LINES.—The *Compagnie Generale Transatlantique*, 330,180 tons and seventy-nine steamers.

The *Messageries Maritimes*, sixty-four ships and a total of 303,700 tons.

The *Chargeurs Reunis*, with twenty-six ships and a total of 132,860 tons.

The *Transports Maritimes*, with twenty-five ships and a total of 91,900 tons.

The *Compagnie de Navigation Sud-Atlantique*, with ten ships, two of which are from 12,000 to 15,000 tons, the total amounting to 85,500 tons.

The *Compagnie Havraise Peninsulaire.*

The *Compagnie Française de Navigation (Fabre)*, etc.

Aside from these, there existed, before the war, a commercial fleet composed of 642 steamers of at least 100 tons (total 947,205 tons), and 1,115 sailing vessels of at least fifty tons (total 460,253 tons).

ENGINEERING

CORROSION.—In view of the enormous importance of corrosion from every practical point of view, it is a matter for congratulation that after years of neglect considerable attention is at length being given to it by researchers, and fortunately they receive the necessary support, partly from such bodies as the Institution of Civil Engineers and the Institute of Metals, and partly from the Government Department of Scientific and Industrial Research. As a result, important advances in our knowledge of the nature and mechanism of corrosion have been made, notably by Dr. Newton Friend and Dr. G. Bengough. The latest report published by the latter—the sixth report to the Corrosion Research Committee of the Institute of Metals, presented at the recent Swansea meeting, and dealt with in our issue of September 22—is of special interest. When it is realized, as indicated above, that for most metals the occurrence of oxidation is a normal and almost necessary process, it is the study of inhibiting causes that becomes of primary interest. Such causes have been sought in two directions. For a very long time, the so-called "electrolytic" theory of corrosion was widely accepted, and differences of electric potential, either internal and local or external and general, were looked for to account

for all cases of rapid corrosion. No doubt in many cases such forces are at work, and the efforts made to eliminate them have proved successful to a limited extent. Thus the effort to reduce internal sources of electrolytic action by the use of metals of very great purity have met with only slight success; on the other hand, the application of external electric currents having a protective action has, in some cases, proved extremely effective. The actual application of such currents, however, is a difficult matter, and some of the most difficult cases of corrosion have not yielded to this type of treatment. More recently, the view that protection is to be sought by a study of the products of corrosion with a view to rendering them protective, in the same way as the oxide skin tends to protect aluminum, shows promise of greater fruitfulness. Although not, perhaps, evolved from any such considerations by its discoverers, it is held by some that the formation of a kind of protective coating or "passive" skin is the real secret of the non-corrodibility of the "stainless" or non-rusting steels containing chromium. In the great majority of cases, on the other hand, it is coming to be understood, thanks to the work of Bengough, that intense local corrosion may result from the accumulation of corrosion products which are not only non-protective, but actually accelerate corrosion. To find the explanation of many of these actions, appeal is now being made to the very modern science of the chemistry of colloids. To most of us, colloidal chemistry is suggestive of organic materials like glue and gelatine, but in recent years a colloidal chemistry of metals has also been developed. It is quite probable that the enthusiastic workers in that field may endeavor to carry their applications of this branch of chemistry too far; but Dr. Bengough—following, we believe, the lead of Dr. Newton Friend—has clearly shown that colloidal solutions—"gels" and "sols"—play an important part in many of the phenomena of corrosion. Nor is this surprising, when we realize that many of the products of corrosion, such as the metallic hydroxides which result from the oxidation of metals in the presence of water, are often met with in a highly gelatinous form. On corroded parts a "slimy mess" is at least as often to be found as a hard crystalline deposit, and it is—roughly speaking—with the understanding of these "slimy messes" that colloidal chemistry has to deal. Whether or not, therefore, the colloidal theory of corrosion affords the full and final explanation of the phenomena, there can be no doubt that the metallurgist, and indirectly the engineer, will be forced to take greater cognizance than hitherto of the chemistry of colloids.

Men of the older school, particularly when faced with such an array of highly specialized jargon as that adopted by colloid chemists, may be pardoned if they face the new viewpoint with some hesitation. The electro-chemical theory of corrosion was so easily understandable that if we must abandon it we shall do so with regret. Yet the history of scientific progress in connection with our knowledge of metals themselves must warn us not to "shy" unduly at a new array of scientific nomenclature. Not thirty years ago the infant science of metallography was widely ridiculed because of the list of "-ites"—"ferrite," "pearlite," etc.—with which its literature was adorned. To-day the scoffer is silent, and these terms are familiar to all metallurgists and even to some engineers. We must therefore face the intrusion of colloidal chemistry into metallurgy and engineering with an open mind, ready to learn and appreciate what it can teach us. These technical words employed by the chemist are, after all, merely convenient abbreviations or symbols; when the concepts behind them are understood, the terminology becomes not only a minor matter, but an easy one.—*The Engineer*, 6 October, 1922.

THE LARGEST MOTOR LINER.—The 600 foot, 18-knot motor passenger liner which the Fairfield Company is to build for the New Zealand-Vancouver service of the Union Steamship Company represents a distinct step forward in the development of the motor ship, for she is to be equipped with engines developing 12,000 brake horsepower, or about twice as much as those in any motor vessel so far built. The machinery, we are in a position to state, will comprise four six-cylinder two-stroke cycle Fairfield-Sulzer engines, each set developing 3,000 brake horsepower and running at 135 revolutions per minute. The cylinders will have a diameter of 27 inches and a piston stroke of 39 inches. The scavenging air will be supplied by three electrically driven turbo-blowers of such size that two will supply all the air required by the four main engines. The auxiliary machinery will include four two-stroke cycle Sulzer engines developing 400 brake horsepower each, at 200 revolutions, and will be direct coupled to dynamos. The main engines will be built in Glasgow by the Fairfield Company under licence from Sulzer Brothers, who will supply the drawings and certain parts. The auxiliary engines will be constructed at Winterthur.—*The Engineer*, 6 October, 1922.

INSTITUTE OF MARINE ENGINEERS.*—The changes that have taken place during the period of my service may properly be described as wonderful. Those changes have appeared in every direction, and most of them, it is pleasing to say, have been highly beneficial and useful.

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The principal changes that have taken place in naval machinery in the period I have referred to are:

(1) The general change from horizontal to vertical engines, the latter being of short stroke in order to keep the machinery under protection.

(2) The increase in boiler pressure and the change from compound engines to the triple-expansion type.

(3) The application of forced draught, in the first place to tank boilers.

(4) The use of locomotive boilers for a comparatively short period.

(5) The introduction of water-tube boilers and the evolution of the most suitable types.

(6) The use of higher speeds of revolution of reciprocating engines, together with many other devices for reducing weight.

(7) The more recent general introduction of steam turbines and of mechanical reduction gearing.

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It will be interesting briefly to consider the nature of some of the problems that will have to be faced in the near future by the marine engineer, and the qualities required of him in dealing with them.

(1) The reciprocating steam engine has reached such a stage of perfection that no radical improvement in its performance is expected, and those to whom it is an acceptable type will take it in its present satisfactory form with the greatest confidence.

(2) In order to combine a high turbine efficiency with a high propeller efficiency reduction gearing has recently been introduced. In this country the gearing has almost entirely been of the mechanical type, and in several cases it has brought with it its own troubles, troubles involving problems of a highly interesting character. They take the form of breaking and occasional wearing of the teeth. Experiences have varied. In the navy mechanical gearing has behaved satisfactorily.

*Excerpts from the presidential address delivered by Sir George Goodwin on September 12.

Other methods of effecting the reduction between the high-speed turbine and the slow-running propeller are also being used, chiefly abroad. In America, and to a small extent in this country, electrical gearing has been favored. It has some advantages over mechanical gearing, but it has also some disadvantages, especially at what may be termed the design stages. As far as I have been associated with such proposals they appear to be expensive in first cost and to require greater weight and space than in some cases can be allowed. Considerable economy in fuel has been claimed for this form of transmission, especially at low speed, and although there is no reason to doubt the accuracy of figures that have been published, care should be taken in making a comparison to ensure that the conditions and attendant circumstances are similar.

In Germany hydraulic gearing has been applied to some ships. One of them has been recently added to the Canadian Pacific Company's service on the Pacific side. Her performance will be of considerable interest, especially in the matter of fuel consumption, as the efficiency of hydraulic transmission is understood to be somewhat low, notwithstanding the heat-saving devices that can be utilized therewith.

(3) Steam boilers, both of the tank type and the water-tube type, have been highly developed in this country, and the efforts which have been made to obtain the benefit of superheated steam in marine installations, especially in the merchant service, have been most creditable alike to the designers and to the engineers in charge. The problem is affected in the navy by the fact that although a large measure of benefit can be obtained at full power, it has been difficult to realize any material advantage when the boilers are being worked easily at low power. It is hoped that recent successful experimental work can be applied in this direction with better prospects.

(4) In America very high boiler efficiencies have been claimed, under certain conditions and with special fittings, which, if maintained on service afloat, will put our engineers on their mettle, and in order to ensure that we shall maintain pride of place it will be necessary for the marine engineer, to whom this problem principally belongs, to have a very wide knowledge, not only of the methods of efficiently burning oil fuels, but of the nature of the fuels themselves, and of the conditions affecting their efficient and economical combustion.

(5) Oil engines for propelling and auxiliary purposes will compel profound consideration for many a long day, and in the near future discussions may take in large part a different form.

(6) The light oil engine has been fitted for propelling purposes in a large number of small craft, and although this application is not largely connected with sea going engineering, it is interesting to observe that the Royal Lifeboat Institution has decided, as far as financial considerations will allow, to proceed with a scheme for establishing motor lifeboats round our coasts, an action which is significant of the reliability that can now be placed on machinery of this type, and one which cannot fail to be of interest to all sea-faring people and which is deserving of their support.

(7) The methods of lubrication of rubbing surfaces have received considerable attention during the last few years, and the correct principles of lubrication are now better understood than they formerly were.—*The Engineer*, 6 October, 1922.

WORLD'S LARGEST MOTOR SHIPS BUILDING IN HAMBURG.—A famous German yard has just received an interesting order which means that this company is building the largest motor ships in the world. Furthermore, the yard holds the record for the amount of motor ship tonnage built during the year. The German firm received from a Swedish shipping

company an order for motor ships aggregating a tonnage of 54,000. They will be fitted with Diesel motors of the system Burmeister and Wain. The Deutsche Werft possesses the license for these motors in Germany. Amongst others, this order includes two large ore cargo steamers each of 21,000 tons, having a length of 550 ft. and a width of 70 ft., which are the largest cargo steamers so far built in Europe, and which, incidentally, on completion, will be the largest motor ships in existence. These steamers will be fitted with twin screws, and will have a speed of 11 knots. The ships will be equipped with the latest appliances for the transport of ore, and are intended for traveling between Sparrow Point, U. S. A., and Chile. The owners of the ships will be a Swedish company, Messrs. Brostrom and Son, Gothenburg, which requires the ships for the execution of a contract they have closed with the Bethlehem Steel Corporation.

The Company has also, during the last few days, received from another Scandinavian shipping company an order for two motor ships each 6,000 tons. The entire motor ship tonnage which will be launched this year, and which is still in construction is thirteen boats, having a deadweight of not less than 118,000 tons, which beats the record of any other shipping wharf in the world.

THE FLETTNER RUDDER.—In the description of the new Flettner type of rudder which recently appeared in these columns* reference was made to its installation in an 8,000-ton motor ship building by the Deutsche Werft at Hamburg.

The ship will be named the *Odenwald* and is for the Hamburg-Amerika Linie. The main rudder is of the balanced type and has an area of 154 sq. ft. The auxiliary blade is actuated through vertical and horizontal rods, the former passing up through the center of the main rudder stock. The vertical rod is actuated through a system of gear wheels and levers by wire-rope control from the navigating bridge, or alternatively from an after steering station, as shown. With the auxiliary blade in operation it is claimed that the power required for steering is less than five per cent of that for an ordinary-type rudder. Steering can be readily effected by hand, and the considerable cost of the usual power steering gear, including its upkeep and operation, is saved.

Under normal working conditions there is no twisting moment on the main rudder stock of the Flettner rudder, but provision has to be made for emergency steering should the auxiliary blade or its gear be disabled. To meet such an emergency the diameter of the main rudder stock must conform with the usual requirements of the Registration Societies and there must be emergency steering arrangements.—*The Shipbuilder*, October, 1922. *No. 144, Vol. XXVII, p. 76.

ELECTRIC DRIVE IN THE DUTCH NAVY.—Before a meeting of the Electro Technic Society of the Royal Institute of Engineers in Holland, Mr. W. F. Pott, Engineer-in-Chief of the Dutch Navy, read a paper giving a full description of the machinery of the submarine depot ship *Pelikaan*, just completed for service in the Dutch East Indies.

She is a vessel of 2,400 tons displacement, fitted with twin screws and driven by electric motors, the electric current being supplied by two dynamos coupled direct to Diesel oil engines. The switching arrangement enables running at reduced speed with only one oil engine running.

All auxiliaries are driven by electric motors, of which sixty-five have been installed throughout the ship.

The oil engines and practically all parts of the electric equipment have been made in Holland. The results of exhaustive trials were very satisfactory.

AERONAUTICS

SEAPLANE FOR SUBMARINES.—Among the inventions tested recently by the Department of the Navy and found to be satisfactory is a hydroplane so built that it can be stored in an undersea boat, or operated from the deck when the submarine is on the surface.

The plane has a wing spread of twenty-one feet. It can be "knocked down" and stored in a four-foot hold within five minutes. Within the same time it can be assembled and launched from the deck. It is a biplane, with the cantilever construction. There are no struts between the wings. The entire surface of the machine, wings and body, is covered with wood veneer. Both wings lift completely off. A quarter turn of a knob removes the propeller. The elevators fold alongside the tail. Four hooks remove the two pontoons. The gas tank is an entirely new departure. It is enclosed under the top wing. The plane is equipped with a five-cylinder Sennes Halske radial motor. It is air-cooled and develops fifty horsepower.—*Boston Evening Transcript*, 6 October, 1922.

THE NEW BARLING BOMBER.—There is about to be delivered by the contractor to the army air service at its engineering division at McCook Field, Ohio, the largest airplane ever constructed in this country. It is known as the Barling bomber, and it is driven by six 400-horsepower Liberty engines. It is a triplane, 120-foot spread, height of twenty-eight feet, and over-all length of sixty-five feet, and at least four men will be required to operate all equipment under service conditions. It is capable of carrying 10,800 pounds of bombs, in addition to gasoline, supplies, two pilots, and two passengers. With 2,000 gallons of gasoline, 5,000 pounds in bombs can be carried for twelve hours, or with reduction in gasoline and thus cruising radius 10,000 pounds of bombs can be carried for seven hours. The machine will be equipped with instruments to show the pilot how the engines are functioning, with a telephone to afford communication between the tail and nose and with radio for communication with the ground. One purpose of producing this machine is to obtain information as to design and estimating performance of such types.—*Army and Navy Register*, 30 September, 1922.

A CRUDE OIL AERO-ENGINE.—It is trustworthily reported that William Beardmore and Co., Limited, acting in conjunction with the Air Ministry, have after lengthy experiments and trials produced a promising type of crude oil aero-engine. The engine has not yet been officially tested, and so far details of its design are withheld. It is understood, however, to be a six-cylinder engine of 750 or 1,000 horsepower. It is known that the Air Ministry has for a long time been devoting close attention to the design and construction of engines using fuel other than petrol and similar low flash-point substances. At the Royal Aircraft Establishment experiments have been in progress for a considerable period on the use of shale oil in an engine operating on the Diesel principle. In addition, the Establishment has been conducting experiments on the solid injection of a fuel containing ninety-five per cent of alcohol. In other directions, too, a similar object is being sought, as, for instance, in the case of Dr. Ferranti's experiments on direct injection in a two-stroke cycle engine. The advantage to be gained by discarding petrol as an aero-engine fuel would consist not only of a diminution of the risk of fire as a result of an accident or of the penetration of the tank by a bullet, but also of an economy in running costs.—*The Engineer*, 22 September, 1922.

LOSS OF THE "C-2."—Washington, October 17.—The dirigible *C-2*, which was destroyed by fire at San Antonio, Texas, was the Army's best

and largest "blimp." It was completed shortly after the army's big Italian-built airship, the *Roma*, was destroyed, with a loss of thirty-four lives, at Norfolk early this year. The *C-2* had a gas capacity of 172,000 cubic feet and was capable of making a speed of sixty miles an hour.

The dirigible was on its return trip from a trans-continental flight, having made the trip from coast to coast in sixty-two hours flying time. Last July the ship made a non-stop night flight from Washington to New York and return, and in the fog narrowly escaped striking a smokestack and some of the New York City skyscrapers.

The length of the *C-2* was 192 feet and its diameter was fifty-four feet. It was equipped with two 150-horsepower Hispano Suiza engines, and was built for the Army Air Service by the Goodyear Tire and Rubber Company, at Akron, Ohio.—*Baltimore Evening Sun*, 17 October, 1922.

HELIUM.—From 8,000,000 to 10,000,000 cubic feet of non-explosive helium gas will be available within a year for the inflation of army dirigibles, Major-General Patrick, chief of the Army Air Service, reported today to Secretary Weeks.

The Secretary of War conferred with General Patrick in his effort to ascertain just what steps had been taken or would be necessary to avert through the use of helium instead of hydrogen such accidents as the destruction by fire of the dirigibles *Roma* and the *C-2*.

General Patrick explained that the envelopes of the dirigibles now in service permitted helium gas to escape. It was said the army has only 1,000,000 cubic feet of helium on hand.

The four new army dirigibles in the process of construction, it was explained, would be equipped with envelopes of a texture which would conserve the gas.

General Patrick also informed the Secretary that the Fort Worth (Texas) helium plant had recently resumed operations.—*The Baltimore Sun*, 19 October, 1922.

CHEAPER HELIUM METHOD.—A simpler and cheaper method of recovering pure helium from natural gas in only one liquifying operation has been perfected by the U. S. Bureau of Mines here, Dr. H. Foster Bain, director, has announced in a statement to the American Chemical Society that is interested in the use of nonflammable helium instead of hydrogen in our airships.

Whereas the helium plants erected during the war, and the Government Fort Worth plant now in operation, put the helium through two processes to make it of sufficient purity for balloon use, trial runs made within the last month in the Bureau of Mines cryogenic laboratory using perfected apparatus promise the easier, more direct method.—*Boston Evening Transcript*, 23 October, 1922.

NEW SPEED RECORDS.—The breaking of every existing record of speed, from one to 150 miles, adds just two more records to the bag of the United States Army Air Service. It now holds the altitude record, the endurance record, the speed record over a closed course for every distance up to 150 miles, and has exceeded, over a closed course of fifty kilometers, the world's straightaway record over a one-kilometer straightaway course.

Lieutenant Maughan's phenomenal race, averaging 206 miles an hour, breaks by over twenty-six miles an hour the previous record, held by an Englishman, J. H. James, flying a Gloucestershire *Mars I*. Lieutenant Maitland made one lap, his first last Saturday, at the rate of 216.1 miles an hour, beating Sadi LeCointe on the much-advertised Nieuport *Sesquiplan*, which made 214 over a straight course of one kilometer.—*Baltimore Evening Sun*, 17 October, 1922.

Brigadier General William Mitchell, assistant chief of the United States Army Air Service, set a new official world's speed record when he flew over a one-kilometer course at Selfridge Field, Mich., at an average speed of 224.05 miles an hour in four heats. The test was timed by representatives of the Federation Aeronautique Internationale, thus making the record official.

General Mitchell drove the Army Curtis plane which last week won the Pulitzer speed trophy and in which Lieutenant R. J. Maughan later drove unofficially at a speed of 248.5 miles an hour.—*Boston Evening Transcript*, 19 October, 1922.

NEW GLIDER RECORD.—Ilford, Eng., October 23.—The honors in the English gliding competition Saturday, fell to France and Holland through last minute efforts of their entries in which two new world's records were established. M. Maneyrolle, of France, smashed all existing records, including those of the Germans, by remaining in the air for three hours and twenty-two minutes in a *Peyret* monoplane. G. P. Olley, flying one of the *Fokker* biplanes, stayed up for forty-nine minutes with a passenger. —*Boston Evening Transcript*, 23 October, 1922.

ORDNANCE

RIFLE BORE CORROSION TEST.—The bureau of mines of the Interior Department has completed an extensive and important investigation as to the nature, causes, and means of prevention of the destructive corrosion frequently suffered by the bore surfaces of rifles through which modern, high-powered charges of smokeless powder have been fired. This investigation is the first systematic attempt that has been made to substitute scientifically demonstrated facts for the various unproved theories and some dogmatic assertions by more or less self-constituted authorities that have been prevalent ever since bore corrosion in high-powered rifles became a subjct of very great importance.

The report contains a wealth of information, which has been embodied in a pamphlet (*Technical Paper* No. 188) issued by the bureau of mines. Following is the summary of the experts:

A review of the scientific, patent, and trade literature and the compilation of the experiences of many practical riflemen has shown much confusion in the theories involved in the after-corrosion of firearms and much divergence in the practices recommended for prevention. Generally this corrosion has been attributed to acid products on the bore, although other explanations, including the action of chlorides, has been advanced. A critical laboratory study, comprising the exposure of fired rifles and fouled barrel sections to known humidities, the chemical examination of the corrosive residue, the use of special ammunition, and the analysis and testing of many "nitrosolvents" and other compositions recommended as preventives showed:

The present high-pressure smokeless cartridge leaves no nitrocellulose residue and no corrosive acid residue. After-corrosion following the use of such cartridges is caused by (1) the explosive deposition of a water-soluble salt or salts in whose aqueous solution the steel corrodes, together with subsequent exposure to (2) a high humidity and (3) the presence of oxygen. In the present service ammunition this salt is potassium chloride from the decomposition of the chlorate in the primer.

Such water-soluble salt or salts are retained in tool wounds and pits on the bore surfaces, in which they cannot be seen and from which they cannot be removed mechanically. They are easily dissolved by water or suitable aqueous solutions.

After-corrosion may also be prevented by keeping both ends of the bore tightly corked.

The present service ammunition can be rendered noncorrosive by eliminating the chlorate of the primer. It may be possible to develop a noncorrosive primer that will not affect the present ballistic properties of the cartridge. This point is under investigation.

A number of nonaqueous compositions recommended for cleaning firearms possess little or no value. Their supposed virtue seems to rest on tests conducted at humidities so low that no corrosion could occur.

After-corrosion proceeds below the dew point.

A simple test for differentiating between worthless and valuable cleaning compounds is described.

Corrosion from nitrocellulose powder occurs only when the confining pressure is extremely low, as in blank cartridges.

The study has shown that after-corrosion is closely allied to a number of other problems of corrosion beneath oil films and has indicated a simple method for eliminating the attending menace to many important iron and steel products other than firearms.—*Army and Navy Register*, 30 September, 1922.

NEW 14-INCH RAILWAY MOUNT.—In the new 14-inch railway mount, model of 1920, which was exhibited a week ago during the meeting of the Army Ordnance Association at Aberdeen Proving Ground, Md., and which soon will be put through a program of tests at that place, the army is in possession of a coast-defense weapon that is more universal in type than any that have gone before and of longer range than any carried on such a mount. The gun has a range of a little over twenty-six miles.

For several decades heavy long-range guns for coast defense have been mounted on carriages of one of two general types, namely, the earlier barbette or pivot mount, which appeared in different forms to suit various requirements, and later the disappearing carriage, which saw its highest development shortly before the World War. With the increasing ranges resulting from advances in ballistics, as well as with development of aircraft, came recognition of the serious inherent defects of the existing seacoast carriages. Foremost among these defects are their vulnerability to attack from above and their uselessness for action at points other than where they were mounted.

In the new carriage an effort has been made to overcome these defects. A mount has been developed that is mobile to a high degree over the railways and through the tunnels of the country, but that sacrifices none of the essentials of a modern coast-defense weapon. Among these essentials are that the mount affords an absolutely level platform that permits traversing without changes of elevation, a means of traversing at constant speed as slowly or as rapidly as desired by power, and loading and ammunition-serving facilities that insure rapidity of fire. In addition, it has features that do not appear in existing types. The concrete emplacement is of very simple form and requires no pit, thus avoiding the difficulties that arise from locations near sea level. Ammunition supply may be from fixed magazines in the vicinity of the emplacement as heretofore, or the mount may be served rapidly and continuously from ammunition cars, thus simplifying construction work and fortifications. Moreover, the new carriage may be used on a temporary field emplacement, thus supplying the need for a mobile weapon of extreme range and heavy caliber adapted for land operations.

The carriage itself provides for extreme elevations up to the maximum range of the gun, and traverse is provided through 360 degrees. All maneuvering may be accomplished by hand or by power supplied from

a generating plant traveling with the carriage.—*Army and Navy Register*, 14 October, 1922.

NAVIGATION AND RADIO

SHORT-WAVE RADIO TRANSMISSION.—Excellent radio transmission has been obtained by using waves of 15 m. generated by thermionic valves giving a power of 200 watts and an aërial current of 1 amp. After a successful attempt over land, a test was recently made from Carnarvon, Wales, to a receiving apparatus on a boat running to Kingstown, Ireland, and speech was received in that harbor, seventy nautical miles from Carnarvon. It had previously been found that the diminution in strength of the received energy was greater at low levels than at high, and it was expected that greater distances than seventy miles could be covered under suitable conditions on land. The result of a test between Hendon and Birmingham, England, was very satisfactory, and it was proved that the effect of the use of a reflector at each end was to increase the received energy 200 times.

The work with experimental stations is to be continued, and the results have so far been such as to make it clear that this new method of direction finding will certainly be developed further. The use of small wave lengths precludes the likelihood of interference from disturbance, but it introduces some difficulties in tuning of the receiving circuit.—*Electrical World*, 7 October, 1922.

ELIMINATING STATIC.—By the use of a so-called "resonance-wave coil" —essentially a complete and compact wireless antenna—the Signal Corps of the United States Army claims to have developed a method whereby "static" or atmospheric disturbances as an accompaniment of orderly radio communications may be eliminated. It is merely repeating a statement of universal acceptance to say that static electricity or atmospheric disturbances is the big retarding factor in the development of radio-telephony. This discordant element in the reception of wireless signals is operative from June to October—about five of the twelve months in the year.

The device of the Signal Corps for instituting proceedings effecting the divorce of orderly wireless signals and the crackling, meaningless noises, takes the form of a drain coil of wire. The incoming signals, for instance, from broadcasting stations, traverse the so-termed "resonance-wave coil" and then proceed to the conventional radio-telephone receiving outfit, irrespective of the design—vacuum tube or crystal set. The noteworthy thing, however, is that this coil of wire or compact antenna is of a discriminating caliber and only wireless signals are admitted passage into the radio-telephone receiver. The atmospheric disturbance or static electricity, discordant note that it is, is sidetracked and conveyed to the ground. Such are the claims made for this new form of "static eliminator." —*Scientific American*, November, 1922.

MISCELLANEOUS

THE WORLD'S NAVIES.—Statistical comparisons of naval strength are in less demand nowadays than they were before the war. There is a widely-held though not entirely accurate impression that competition has ceased and the world's leading navies have become stereotyped as to dimensions for at least ten years ahead, so that the 5-5-3 formula is a rough but reliable guide to the relative strength of the three principal fleets during that period. It is felt, moreover, that the old method of computing the power of a navy simply by totalling up the vessels of each type is no

longer practicable, having regard to the great differences which now exist between individual units of any given type. To take a specific instance, we find that the designation "battleship," always a very elastic one, has to-day become all but meaningless unless it is carefully qualified. A sharp differentiation became necessary with the introduction of the all-big-gun type, and so we began to use the terms "Dreadnaught" and "Pre-Dreadnaught," to which was soon added the unofficial but useful tag of "Super-Dreadnaught," signifying a vessel armed with guns above 12 inches caliber. Now, thanks to the war and the technical progress to which it gave rise, we have had to invent other labels to distinguish battleships one from the other, and "Pre-Dreadnaught" and "Post-Dreadnaught" have each come to possess a very definite meaning. To a smaller degree the process of subdividing each category applies to every other type of fighting craft, the result being that the mere enumeration of its various ships conveys no trustworthy idea of the actual power of any combatant fleet.

These remarks are suggested by the recent publication of an Admiralty *Return*, giving particulars of the navies controlled by the chief States of the world. The complete document is informative, but the published summaries are apt to be misleading. Under the heading of battleships, for example, there are lumped together indiscriminately pre-Dreadnaughts of venerable age and post-Jutland ships of the very latest type. Italy is credited with twelve "battleships" and Japan with no more than eleven, in spite of which the Japanese group is at least twice as powerful as the Italian. Another anomaly is the inclusion among Japanese "battle cruisers" of three old 14,000-ton ships which have no real pretension to that imposing title except that they are officially listed as such in Japan. "Cruiser" is another term which covers an extraordinarily wide range of vessels, varying in this case from the *Courageous*, of 18,600 tons, to the U. S. *Charleston*, of only 9,700 tons. The task of classifying monitors appears to have caused the Admiralty compilers some difficulty, for under this heading are listed five Japanese vessels which bear no resemblance to our monitors, and are really old armor-clads disrated to coast defense status, a fact made clear in the return itself. But a certain confusion is inevitable when, as in this return, the British system of nomenclature is applied in some cases and foreign systems in others. It is only fair to say, however, that strict adherence to national designation in every case would probably have resulted in making confusion worse confounded so far as the lay public is concerned. Where the tables are both interesting and valuable is in relation to their exposé of comparative strength in the types which are not affected by the Limitation Agreement—that is, light cruisers, torpedo craft, and submarines, and a study of the figures here shown gives food for thought.

Our preponderance in light cruisers is considerable, possessing, as we do, fifty-one built and eight building, though many of the former are marked down for the scrap heap. Of ships built the United States has nine to Japan's twelve, but, while all the American vessels are obsolete the majority of those owned by Japan are of up-to-date construction, and as the light cruisers building for the two Powers number ten and thirteen respectively, the Japanese lead in this type is very pronounced. In destroyers the position is as follows: Great Britain—Built, 200; building, eight. United States—Built 315; building, three. Japan—Built, fifty-eight; building, twenty-eight. With regard to these figures it may be noted that a certain proportion of our 200 boats are probably ineffective through enforced neglect, and would need extensive repairs to make them fit for active service; that the Japanese total is apparently understated, and that ninety per cent of the American destroyers having been post-war built,

are probably in the best of condition. The submarine totals are even more significant. We have ninety-three boats built and eight building, the United States has 102 and thirty-eight, and Japan twenty-four and thirty-one. Here again there are discrepancies between the Admiralty *Return* and other sources, which credit Japan with many more than twenty-four completed boats. As it has been decided to scrap twenty-seven of our submarines this financial year, we shall then be left with but fifty-eight, only one of which is of post-war design. On the other hand, Japan will have at least forty boats and the United States about fifty boats, all designed since the war. If therefore, the submarine is destined to play in future naval warfare that important rôle which its champions forecast for it, our establishment cannot be considered excessive, and is in any case far below the ratio we claim in capital ships. This Admiralty *Return* serves, indeed, as a timely reminder that our margin of naval power has become exceedingly narrow and will not bear further trimming unless we are prepared to accept a position of definite inferiority in future.—*Naval and Military Record*, 20 September, 1922.

NAVAL DISARMAMENT.—Have we all been premature in assuming that the Washington Treaty had finally put an end to all rivalry at sea between the navies of the different nations, each of which was to be "rationed" according to the scale laid down by the Conference? America and Great Britain have accepted the ratio allotted to them, and Great Britain at any rate has set a splendid and public-spirited example in reducing her naval strength to limits which may prove to be even smaller than those the Washington Treaty assigned to her. But Brazil, which was one of the lesser naval Powers, the fixing of whose quota was left to the League of Nations, has formally notified the Disarmament Commission that she is unable to participate any further in any of the League's schemes or any international Conference for naval disarmament based on the Washington Treaty or the principles contained therein. The chief ground of her objection, as stated by Senhor Oliviera, her representative at the League Assembly at Geneva, are two in number, the first having reference to the limit on naval construction, the other to the prohibition of the construction of a new navy yard. The latter in particular is insisted on, because at present Brazil has no Government Dockyard, and the acceptance of the Treaty would prevent her from ever establishing one, and leave her permanently at the mercy of foreign nations for the supplies of naval ships. Hitherto, though her navy is not inconsiderable, Brazil has looked chiefly to British shipbuilders to construct her ships for her, and in the interest of our own shipbuilders we shall not be sorry if she continues to do so. But the ground of her objection is quite comprehensible, and it touches a point which the Washington Conference, carried away as it was by the enthusiasm aroused by the speeches of Mr. Hughes and Mr. Balfour, seems to have regarded as of secondary importance. Argentina has already withdrawn altogether from the League, and with Brazil in the same position as regards disarmament more than half of South America will remain unbound by its stipulations. Moreover, Chili and Uraguay have a plan to organize a Pan-American League of Nations in March, and if this scheme goes through, with the United States already outside the original League, the latter will have its operations confined, except as regards British territory on the American continent, to the eastern hemisphere, and as the American peoples both North and South, are rapidly growing in numbers, wealth, and power, they may very easily in time overtop the European nations altogether.

Moreover, there appears to be some doubt as to whether the naval agreements of the Washington Conference will be ratified by France. Ac-

cording to the French Admiral Favereau, who commanded a squadron in the North Sea during the war, public feeling in France is strongly opposed to ratification, for several reasons, of which perhaps the most prominent is that the datum taken as determining the relative strengths of the different navies in the future was that of the close of the war, not that of before the war, and was consequently highly unfair to France, which was then the fourth largest navy, coming next after America, before Japan and far before Italy, both of which added largely to their navies during the war. If the anticipation that France will reject the naval disarmament proposals should prove well founded, what becomes of the proportions so carefully drawn up to regulate the relative strength of the navies? Unless there is a common agreement for limitation it is difficult to see how the nations are to avoid the bad old system of naval rivalry, which put them all to the enormous cost of building against each other, without ever reaching finality or being substantially benefited in return for their outlay. Limitation of land forces has apparently been relegated to the Greek Kalends, nor, till Germany begins to carry out the Treaty of Versailles in good faith and the wars and rumors of wars in the Near East come to an end, is it possible to look forward to any immediate reduction in land armaments. But it had been thought that on sea at any rate there was a prospect of harmonious agreement to disarm. If this is not the case the hopes of a permanent peace will become weaker than ever, and the nations, in sheer fear of being caught napping, will begin once more the "mad race of armaments." If the League of Nations is to be really anything more than a glorified debating society it should take this question in hand at once and leave no stone unturned to secure general agreement upon a matter of such vast national and international importance.—*Naval and Military Record*, 20 September, 1922.

THE CRUISING ENDURANCE OF SUBMARINES.—Among the popular misconceptions with regard to naval material that prevailed before the war, none was more deeply rooted than the notion that a submarine boat could remain at sea only for a few days at a time, and therefore could not be employed in any operation which involved a prolonged absence from its base. This was one of the principal arguments with which Sir Percy Scott's critics sought to refute the sweeping claims he had made on behalf of the submarine only a few weeks before the outbreak of the Great War. It was put forward, not merely by civilian writers, but by several naval officers of high rank, and in view of this authoratative opinion it is not surprising that the general public came to regard the submarine as being useful only for coastal operations. Events soon showed, however, that the sea-going range of these vessels had been grossly underestimated. In the first month of the war German *U* boats were met with several hundred miles from their nearest base; early in 1915 they were encountered off the coast of Ireland, and by the spring of that year one boat had arrived at Constantinople after a voyage of 3,450 nautical miles from Wilhelmshaven. Meanwhile small British submarines built in Canada had crossed the Atlantic under their own power, and the *E-11*, of 675 tons, had made a trip in the Sea of Marmora—that is, in enemy waters—lasting thirty-one days. Then, a year later, came the cruise of the German *U-53* to the United States coast and back, a voyage of at least 7,000 miles, which was accomplished without replenishing the supply of fuel. It may be said, therefore, that the cruising endurance of submarines proved to be about ten times greater than pre-war forecasts had indicated. There is still some uncertainty as to the maximum period of time which a submarine spent continuously at sea during the war. The British boats on the Atlantic patrol frequently made voyages of well over one month's dura-

tion, while according to German accounts the first *Untersee-Kreuzer*, the *U-139*, made one cruise lasting six weeks.

Interest in this question of submarine endurance has now been revived by the remarkable performance of a French boat, the *Victor Réveille*, which was recently ordered to carry out a test for determining how long she could remain at sea. Leaving Cherbourg at the beginning of July, she arrived at Toulon on August 31, after an uninterrupted voyage of sixty days. This, so far as is known, constitutes the longest voyage which has been made by a submarine up to the present date, though it need hardly be said that peace conditions are far more favorable for such a test than those which obtain in war. The *Victor Réveille* was formerly the *U-79*, and is one of the many ex-German submarines now under the French flag. Completed at Hamburg in 1916, she belonged to a group of ten boats which were especially designed for mine-laying, and one of which sowed the mines that sank H. M. S. *Hampshire*, with Lord Kitchener on board. The performance of the *Victor Réveille* is the more noteworthy in view of her modest dimensions. On the surface she displaces only 755 tons, increased to 833 tons when submerged. Her length overall is 186ft. 4in., the breadth 19ft. 10in., and the draught 15ft. 1in. She is therefore less than two-thirds as long as a modern destroyer and some 10ft. narrower in beam. The propelling machinery consists of two sets of Diesel four-cycle six-cylinder engines, developing 900 brake horsepower, which gives the boat a surface speed of 10.6 knots. For submerged propulsion the electric motors develop 800 brake horsepower for 8 knots. In his paper on German submarines, Mr. A. W. Johns, R.C.N.C., said that the class to which this boat belongs differs from all the ordinary *U* boats in having internal main ballast tanks. They have a pressure hull of large diameter—16.4ft., as against 13.5ft. in *U-161*—and small external saddle tanks, which, instead of carrying water ballast, carry oil fuel. The two main ballast tanks are internal, the larger extending under the mine room and up the sides of the motor room, while the other is under the engine room and partly up the sides of that room. With a full load of fuel, amounting to eighty-seven tons, the nominal range of the *Victor Réveille* at an economical speed of 7 knots is 7,800 miles. It is not yet known what distance she actually covered in the course of her sixty days' voyage, but it is evident that had a speed of 7 knots been maintained throughout, the total run would be 10,080 miles, or 2,280 more than she is supposed to be capable of making on one load of fuel. In point of fact, the radii of all the German boats with which our experts have had experience have proved to be substantially larger than the official German estimates, and there is more than a suspicion that their actual endurance was purposely minimized for obvious military reasons. That the submarine possesses a much wider radius of action than any surface warship of equivalent size is now well known, but it is doubtful whether the full extent of her advantage in this respect is commonly realized. She derives it mainly, of course, from her internal combustion engines, which at low power are very economical in fuel consumption, while the structural arrangement of the hull is well adapted to the carriage of a large supply of oil in proportion to the displacement. Official data published since the war show that great cruising endurance was aimed at in the design of all German submarine types. In the *U-29*, a typical *U* boat of 675 tons displacement, the endurance at an economical speed of 8 knots was 9,800 miles. In the *U-43*, of 725 tons, it increased to 11,250; in the *Untersee-Kreuzer*, Nos. *139* and *142* it was respectively 18,000 miles at 8 knots and 20,000 at 6 knots. Still more remarkable were the corresponding figures for the smaller types; the *UB-18*, of only 272 tons, was credited with an endurance of 7,000 miles at 5 knots; the *UB-48*, of 516 tons, with 9,000 miles at 6

knots; and the *UC-16*, of 410 tons, with 8,700 miles at 7 knots. These are boats whose limited dimensions would seem to put them in the category of coastal submarines, yet they were nevertheless capable of voyaging for many thousands of miles. The longest-range submarines built in Germany appear to have been the Deutschland and her six sister boats, originally designed as submersible cargo ships, but afterwards converted into fighting craft. Although of only 1,510 tons displacement, their fuel supply was sufficient for a continuous run of 25,000 miles at a speed of 5½ knots. However, when estimating the sea endurance of small vessels, whether of the surface or submersible type, it is necessary to take other factors besides the mechanical into consideration.

That a boat such as the *UB-18* could really make an uninterrupted voyage of 7,000 miles may well be doubted. Owing to the cramped accommodation below and above deck, the difficulty of ventilating the narrow interior spaces packed with machinery, the noise of the Diesel engines, and the violent motion of the boat in rough weather, the health of the crew would inevitably begin to suffer after a few weeks at sea. In other words, the human element would be liable to become exhausted long before the mechanical element had reached its limit. In time of war the conditions of service on board would, of course, be infinitely more trying; there would be a constant strain on the nerves of the men when they were at sea, especially in enemy waters, and therefore had to spend most of their time under hatches. The actual radius of any type of submarine in war time would therefore depend primarily on the mental and physical stamina of the complement, which implies that it cannot be fixed with any degree of precision. But as submarines increase in size, enabling better living quarters to be provided and setting free more space on deck for exercise and recreation, the conditions of service tend to become more tolerable, and there is consequently less likelihood of a breakdown occurring in the health or *morale* of the *personnel*. There is no visible reason why a very large ocean-going submarine should not be able to remain at sea as long as her fuel holds out, without imposing any superhuman strain on the *personnel*. On the other hand, if dimensions are increased beyond a certain limit the submarine becomes difficult to maneuver below the surface and requires to be navigated with extreme care in all but the deepest waters. For this reason every navy will no doubt continue to build boats of moderate size—say, up to 1,000 tons—for general service, while at the same time developing the large submersible cruiser type for special overseas operations. This division of types seems, in fact, to have been adopted in the United States, France and Japan, following the example set by Germany during the war. Although the prospect of a long period of peace has naturally slowed down the development of the submarine boat, steady progress is still being maintained, and there are boats now under construction abroad which appear to be little if at all, inferior to the German submersible cruisers in respect of sea endurance. The advent of submarines capable of crossing and recrossing the Pacific Ocean with a margin of 10,000 miles to spare promises to introduce a new and complicating factor into naval strategy.—*The Engineer*, 15 September, 1922.

ITALY'S INTERESTS IN NEAR EAST.—*Il Messaggero*, a semi-official Roman daily, said in a recent issue: "Every country has its own particular program. Italy has a program to submit and defend which can be summed up: 'The reconstruction of Turkey.'" The article goes on to say that: "The British anti-Turk policy must give way to a policy of National justice in the common interest of Europe. This policy of justice will commence by the re-construction of Turkey, the re-instatement of the Sultan at Constantinople, and the return to Turkey of all Musulman regions in Europe and Asia."

With respect to Anatolia, Italy's interest will be served by seeing Greece ousted from Smyrna. Italy has lost that trade center since its occupation by the Greeks. Furthermore the presence of the latter there tends, in the opinion of Italians, to destroy the equilibrium in the Eastern Mediterranean which is an essential point in Italy's foreign policy. Italy feels that with the Greeks out of Smyrna there is a chance that she will be placed again in the position accorded to her by the treaty of St. Jean-de-Mauriene, or even if the Turk retains Smyrna that, by championing his cause, she—Italy—may be accorded special trade privileges there.

Il Mondo, a conservative, able paper, with Nitti tendencies said, recently, "As far as Constantinople is concerned, it is certainly impossible to conceive of a Turkish State with its historical capital either occupied by foreign troops or strangled to the extent (to quote here the elegent expression of M. Venezelos), 'of having barely sufficient air to breathe.'"

General Bencivenga, who has written extensively on international topics, has a leading article in *Il Paese:* "The freedom of the Dardanelles, evacuation of Thrace by the Greeks; re-establishment of normal relations between Christians and Musulman," sums up Italy's interests. He contends that the freedom of the Dardanelles is essential since the Black Sea is the natural area for Italian commercial expansion. For this reason Italy cannot consent either to allow the Turk to be master of both sides of the straits or to tolerate the permanent establishment there of any great power. With respect to Thrace: Italy, which is very sensible to Balkan disturbances, cannot consent to the state of unstable equilibrium that results from Greece's possession of Thrace, a territory, which because of its strategic position and Greece's military situation, she cannot hold. Furthermore, the writer says, it is in Italy's interest that Bulgaria has an outlet to the Aegean Sea.

"DON'T GIVE UP THE SHIP."* By Brigadier General George Richards, U. S. M. C.—This is the third time I have had the pleasure to appear before the officers undergoing instruction at this command. There were two subjects it was my endeavor to talk about before—one was "Initiative and Leadership"—the other was "Administration." As to the talk of to-day, it may have a subject, but I do not venture to give it a title. A year ago I tried to express here one dominant thought, one idea that seemed to me we might write down as a work-a-day principle to guide us in the solution of problems confronting us in the building up of a new Marine Corps, problems that to a large extent must be successfully solved solely by us. We were to take counsel with ourselves to meet these great questions. For, when people get together themselves and collect their individual forces together, the thing they aim at doing is usually the thing in the end that is accomplished. There was once a story told, one of Æsop's fables, I think, about the man with seven sons. You remember the boys—as they grew up or were growing up, they could never agree—always they were found bickering amongst themselves. You will recall the father's method of illustrating his point. How he brought seven sticks, each of which he separately broke with comparative ease. Then the old gentleman went further, taking seven more faggots, he bound them together. Not one of his seven sons had the strength to break the bundle! So it is for unity I stand here to-day!

The war brought home to many of us older officers lessons of great importance that recalled our earlier experiences. There were we who stayed at home to keep for you the home fires burning, so to speak. We who served here while we waited. And then there were you who

*Address delivered at Marine Corps Schools, Quantico, January 19, 1922.

so valiantly bore on the front line our Country's honor in France! How proud we were of your achievements! Now, let me tell you here of the finest thought that was brought back from France to me. It came from one of you who had helped so well to bear that burden Over There. This was his thought—"That Fourth Brigade, that apparent raw material we took to France. And it is true we trained it there for a year under our own eyes for the task for which we were sent. Then with the perfect or almost perfect instrument it was, we were thrown against the Germans. The reward for what was done there—the distinction and the glory that came out of it all was ours—all! But the credit, there's the rub—the credit I do not think we may rightfully claim. That belongs to many who never put their feet on the soil of France. The Fourth Brigade was the product of thirty or more years of constant and united endeavor of all of the Marine Corps, all working together in one earnest effort." Now that seemed to me, a home-fire burner of some thirty years of activity as a most gracious compliment to all of us and a compliment very tactfully extended. I cannot ever forget it. I think, though, I should tell you my answer. "That organization, the Fourth Brigade," I said, "was not the fruit of thirty years of effort, not by any manner of means." It was the work of 146 years. Back I would go to the very beginnings. Back to those men whose names are now almost forgotten, men who for years have lain in their graves. They laid the foundations upon which our building began. What names for us to conjure with! Samuel Nicholas —William Burrows—Franklin Wharton—Archibald Henderson—Presley Neville O'Bannon! That last name—it brings to me an incident of recent years. You might yourself be put some day in a situation where you are about to be hurried or stampeded into doing something your judgment does not accept. There were people who wanted to change the uniforms and they were advocating a new sword, a more practical weapon. Their arguments were sound or seemed so. There was no answer. But someone was reading from the uniform regulations descriptive of our sword, our so-called obsolete weapon. A sword with mame-luke hilt curved blade and metal or nickeled scabbard—"Don't you think that sword had something to do with Presley O'Bannon? He who with his Marines made those Arabian mame-lukes into soldiers and with them stormed the Fortress at Derne 'On the Shores of Tripoli?' And hoisted for the first time the American Flag on a Fortress of the Old World?" That question was enough. It stopped the movement and, as we looked further into the matter and in detail, we found this to be true—that sword of ours of today is modeled from the very sword presented by the State of Virginia to Lieutenant O'Bannon of the Marine Corps in recognition of that daring exploit! We are not likely now ever to lose it. For the memory of Tripoli is something that we shall preserve in our history so long as there is an American Marine!

But I was speaking about France. This is what I would say. The friendships formed on those front lines are as bonds of steel welded by fire to keep you who served there together always. Your deeds in France must be told and re-told to one another and you must gather and regather that their memory be preserved. As the whole Marine Corps preserves in that sword the symbol of our common heritage from O'Bannon so would the whole Marine Corps help you to preserve through the memories you recount of France an inspiration for the Marine who is to come after us. There are no two schools of thought in this—no two schools such as I mentioned when I was last here at Quantico. The Marine Corps in its approach to line and staff questions—that was what I was then talking about—the Marine Corps in its approach to all questions upon which we might be led to divide puts forward but one thought, no other

thought than this, "we are all for one and we are one for all." I am going to try to put myself back to my own days of twenty odd years ago, just for a moment. Just after my Philippine days and more particularly the times of the Boxer War—for my closest friends in the Marine Corps to-day are those that I served with in China in those stirring days of the summer of 1900. The Ninth Infantry, for instance, that fought alongside the Fourth Brigade of Marines in France was with us then. So was the Royal Welsh Fusileers that furnished the Guard of Honor when General Pershing first landed on British soil in 1917. Those Welshmen I liked because they had been Marines in the War of the Revolution. I am not going to tell you their story here; I am going, though, to speak of an incident after those China days were over. I was on the old White Star liner, the *Gælic*, returning home. It was full of missionaries—men and women thrown out of the interior of China by that great upheaval. Amongst them was an old Methodist parson, who had served fifty years there—he had rarely in this time seen or spoken with one of his own race. He was a man, active, zealous and earnest. He was one who believed in his work, a man of broad mind not influenced by prejudice. He told me a story I want to leave with you to-day. He was to build a little mission. He wanted bricks. Finally, he came in contact with a Chinaman, a brickmaker, who sold bricks. The missionary was disturbed over the quality of the goods he was to buy. Finally, he said to this Chinaman—"Are you sure you can make me good bricks?" I can picture that brickmaker in his reply. Drawing himself up to full height, with great dignity, with pride in his eye, and in his speech, he said: "I have made bricks for eight hundred years." And my missionary friend added to me—"So he had, he and his father and all his forefathers before him, they had made bricks, and all that the family had developed for thirty generations in the making of bricks that skill was the proud possession of this Chinaman." Of course, such a man could make good bricks!

We all here will remember Mr. Gilbert Wilson who taught the Marines of Quantico to sing. Let me tell you what he once told me. He said that the first words of that song; I never, never heard the song without a thrill comes over me—its first words—

"From the Halls of Montezuma,
To the shores of Tripoli;"

there are just ten of them. Wilson said to me, "There is your *morale*, there is your *esprit*, all in those ten words, history, tradition, everything." I read of the wounded from Belleau Woods being carried into the hospitals in Paris singing the Marine's battle hymn. In reading I knew, I understood, though I did not see! "History, tradition, everything." No, we "stay at homes" did not see. But how proud we were and what an honest pride we have now. How we pictured you, how we tried to follow you. We heard you had been broken up and made the military police. That we did not like—we had known of its evils for us in our efforts to assimilate in the Navy the soldier with the sailor. Finally we heard that you had had to send your General, the Marine General, the late General Doyen, home broken in health and that an Army General was to command you. That depressed us, but as it was not a new experience in our life to be commanded by an officer from another service we were, though depressed, not impatient. We felt better, though when we heard the compliment paid you in that General Pershing's Chief of Staff, General Harbord, was your commander. I'll not follow you further in detail—only this would I say, the Army more than doubled that compliment after you had done so well in June of 1918, for then they gave to the Marine Corps, to General Lejeune, the command of an Army Division,

two-thirds of its officers and men being of the United States Army—there was a distinction never before conferred upon the Marine Corps, never before had a mixed force—such a mixed force as we were accustomed to in our life or experience in the Naval service—ever been commanded by an officer of the Marine Corps! And even if your identity as a Marine was then lost in that great organization and we could not follow you further, we never ceased then or now to take pride in the achievements of the Second Division. Your worth as a Soldier was not to be questioned by anyone! Of that we were sure and we were secure! It seems now—as I hesitate—that I have not come down here to talk to you—I am here just to tell stories. I said you saw a lot that I did not see nor could I visualize—I mean in France. There was something we heard about that was there. It was a very necessary article, it seems. Not exactly an incinerator, or even a pot boiler. It was a machine to steam the soldiers' clothing, *all of them,* when opportunity availed and it had an ugly name. Well, before I get ahead of my story—there was a marine sergeant or a doughboy, it may have been, who was strong on history. He knew all the historic utterances of heroes of almost forgotten wars. He could say most of them, and it seems they all came from the Navy; he must have been a Marine! "Damn the torpedoes." "You may fire when ready." "There is glory enough for all"—these he could readily repeat. Well, his company had come back from the front line trenches. The men were all disrobed for their bath. Their clothing was being gathered up when this machine hove in sight. They cast the machine loose and started the fire to make it function. The men were all very much interested. They had gathered about in their birthday raiment, I suppose you who were there know exactly how they felt. As their clothing was being dumped into the machine they began to cheer! It was the sergeant's opportunity; he mounted the machine and shouted: "Don't cheer, boys, the poor devils are dying."

I don't pretend to be very strong on historic sayings. There is one, however, I can never forget. It also came from the Navy. I was born in the State of Ohio, down on the Ohio River. I grew to fifteen years of age with a little knowledge of the Navy and none whatsoever of the Marine. That seems strange to me now, for I well remember the story in McGuffey's Fourth Reader about the Mutiny in the Massachusetts State Prison in 1824 and of Wainwright. But I did not associate him then with the Marines. In those days in fact I never had seen salt water. But the county in which I was born and grew up was named *Lawrence.* My father, an old Welsh Quaker, was born in Chester County, Pennsylvania, but had settled in Ohio at the age of ten, with my grandfather—he told me for whom the county was named—it was for James Lawrence; Captain James Lawrence of the United States Navy. My father told me how James Lawrence had died on the quarterdeck of the ship *Chesapeake,* pierced by a musket ball in an engagement off Boston harbor with the British ship, *The Shannon.*. And he spoke to me of Lawrence's heroic words, which have become immortal: *"Don't give up the ship."* In such circumstances I shall never forget them.

Do you know how or why the Marines were sent to France to serve with the Army there? Let me tell you the truth. It was not so much because the Army needed you there, for indeed they had asked for you. It was because the General Board of the Navy decided that the best training the Marines could have for their distinctive duties in connection with future operations of the Fleet was that to be afforded in actual warfare in France. You went there when the Army called for all trained troops available, but you went there for strictly naval purposes—let me repeat "Strictly Naval Purposes," that was why you went to France. Let me most forcibly impress this upon you!

Last November, for the first time in my knowledge, the Marine Corps celebrated its birthday. You remember the terms of a very inspiring Marine Corps Order issued on November 10, 1921? That was our one hundred forty-sixth birthday! What I would here draw your attention to concerns the circumstances under which we were instituted and the reason for which we were brought forth. The War of the Revolution was distinctively a conflict that ended in the favor of the side that mastered the sea. No one makes that clearer than Mahan. No one recognized it with greater force than George Washington himself, for to Admiral De Grasse, commanding the French Fleet at Yorktown, he unselfishly gave the credit for that victory—a credit history persists in granting to others.

But in 1775 the Corps of Marines sprang into existence. In the resolution that created the two battalions of those days, it was specified "that particular care be taken that no persons be appointed to offices, or enlisted into said battalions, but such as are good seamen, or so acquainted with maritime affairs as to be able to serve to advantage by sea when required; * * * that they be distinguished by the names of the First and Second Battalions of American Marines."

Let me lay here a little stress on these words of our Fathers—"So acquainted with maritime affairs as to be able to serve to advantage by sea when required," for I am going to depart just a moment from my text and indulge myself in a bit of sentiment. While we are perpetuating in the organization of the Marine Corps the illustrious name of the *Fourth Brigade*, it might be wise for us now to recreate somewhere two units with the object to perpetuate those organizations of the Continental Congress: "The First Battalion of American Marines, and the Second Battalion of American Marines." Only once in the history of the Marine Corps did Congress create for it distinctively military units. I have just described the occasion. Let me pursue that sentimental thought a little further. Do you know that the First Flag of the Continental Navy came from the Marines? That is true, though there are people who would dispute it. Back in the days before the Revolution, at the time of our birth in 1775, before even the Declaration of Independence was written, before even the United States of America could be so called by name, we have the story. Benjamin Franklin wrote that he had observed on one of the drums belonging to the Marines whose recruiters were raising these two battalions, there was painted the rattlesnake with this motto under "Don't Tread on Me!" Franklin said, knowing it was the custom to have some device on the Arms of every Country that he supposed this design was intended for the "Arms of North America." That corps of drummers often marched the streets of Philadelphia in those days "drumming up recruits." When later, Congress created the Continental Navy, that device of the Marines became the design of the Flag that flew from the mastheads of our first ships of war.

So I think it safe to say it was for sea service the Marine Corps was created and that it has been sea service that has perpetuated him. And it is equally safe to venture that want of proper sea service or "acquaintance with maritime affairs so as to serve to advantage at sea if required" will be a means through which his existence as a Marine may terminate.

The fleet of to-day is not the fleet of a century ago. Naval science presents a variety of new conditions. No longer can the Fleet of the Line maintain itself in readiness for conflict for such extended periods of time or in so wide an area as did the fleets of Nelson and Collingwood. The modern fleet required different methods through which its area of sea control may be extended. A base of operations, a rendezvous for repairs, is still, as before, an essential. But something further is required.

The modern fleet required different methods through which its area its power, its radius of control or action, through the establishment of advance bases, temporarily fortified, at a distance from the main base. Here lies the most important auxiliary service for the Marine Corps, a service you here at Quantico are trying to develop through intensive training of the commissioned and enlisted force of a unit you have established. The need to the Fleet of a mobile force, armed, equipped and trained for the purpose of seizing and defending the advanced base is now a prime necessity of all strategic or tactical plans. Such a force, not drawn from the personnel of the ships of the first line, but separately organized, transported and maintained as a distinctive tactical unit of the Fleet, known as the Advanced Base Unit, is a most important fleet auxiliary.

That the Marine Corps to-day is a mobile force, ready to move at the moment's notice, is due to its sea habit, its naval *esprit*, acquired by its officers and men in their varied service as part of the complements of sea-going vessels of the Navy. This has been developed in a distinctively naval atmosphere. This naval *esprit* has been diffused throughout the rest of our personnel. It is with great satisfaction to observe how well this process is progressing here at Quantico. The experience the Marine and the Marine officer gain at sea as an inherent part of the complement of sea-going vessels of the Navy is an asset to the whole Marine Corps and to the Navy. It is an asset that could not be exchanged for anything else except at the sacrifice of the efficiency of both the Navy and the Marine Corps—the entire Naval personnel. It is only through such a service that the true perspective is to be gained, that the naval purpose of the Marine is visualized. The educational opportunities of the life of the Marine Officer in the ward-room mess, to say nothing of the lasting contacts and friendships that are there formed for us, cannot in their worth to the Navy be overestimated. It is these conditions that have brought forth in the Marine of these times, officer and man, the qualities that go to make up a highly trained efficient force of naval infantry, or artillery instantly available for naval use. Such a force as we now have in the Marine Corps with its naval *esprit*, its familiarity with naval customs, the uniform, the precedents and traditions of the sea is a force that will be controlled in future naval operations by the one mind that directs the campaign, the Commander-in-Chief of the Active Fleet. Questions of divided authority, which the history of all nations show to have been involved in joint operations of distinctly land forces with sea forces, cannot arise. With the Marine Corps as it now is and as you here at Quantico are making it in the training of the advanced Base Force, the Navy cannot fail to have perfect co-operation. You are not being maintained here as a land force separate and distinct from the Navy. The whole plan you follow here in your training of that unit is one established in detail by the proper technical Bureau or Office of the Navy, located within the Navy Department. This plan is being worked out by the Marine officer in the closest of liaison with the Navy Department and more particularly the Fleet. I would that all the Naval service were conscious of what you are developing here under such favorable auspices, an instrument necessary for the Fleet. An instrument vital for success in whatever duty our Country's welfare may lay upon the Fleet.

In getting together with the Navy in this admirable way you are carrying forward their great work here at Quantico, you are fulfilling my fondest aspirations—*Don't give up the Ship.*

The together idea, I told the last class here was the progressive idea. When interests are divided or forces are distributed, ruin is not far off. But as we naval officers (for Marine officers are Naval officers) draw all our forces together, the power of the whole naval organization is

increased and we shall get there. And there was another thought I felt here on my last visit, and that was this—that there is plenty room in this great organization for all to live and work in happiness and in peace. There was a time as I was growing up in this Marine Corps that it did not seem so to me. I mean when we were trying in our poor way to do what is being done so admirably here to-day. When we were endeavoring to develop the Marine Corps for the Navy. When we were trying as best we could to save the Marine Corps for the Navy, with elimination absorption abolition stalking at our heels. There were those of the Navy who would not help us, for it seemed then it was the irrepressible conflict of the "sailor and the soldier" within the Navy. The details are too lengthy to repeat, they would serve no good purpose here. But I would have you know there was a final paper written that seemed then to end the conflict happily for all. That paper was completed on July 23, 1913, the anniversary of the birth of General Grant, a great soldier. Two days later, the General Board of the Navy in an admirable report put the entire question officially at rest. Something written in that paper, for it was printed—it was my own, I would now read to you. The words include one more historic saying by Grant (not the Navy this time). What was so written was for the same object as of my talk to-day; here are the words: "Twenty-eight years ago, on July 23, 1885, there died one of the most illustrious soldiers our country has produced. Our fleets received on North River, beneath the shadow of his tomb, the plaudits of the Nation for our victories as against the ships of Spain. He was a man of great deeds, but of few words. Having crushed at Appomatox the most formidable opposition to Federal authority, having vindicated by force of arms the policies of his Government, he united in common interest the discordant elements of his people and endeared himself to his fellow-countrymen for all time, saying: 'Let us Have Peace.'"

I say God-speed to you in the work you are here doing in peace for the Navy; in the building up on safe and sane foundations, under a doctrine expressive of plain common sense what is essential for the future of the Marine Corps. You are doing this in the exercise of moderation and self-restraint—you are suppressing prejudices, rejecting passion and emotion—even hair-trigger judgment in this real reconstruction of the Marine Corps for the purpose of the Navy. Now as a final word, only the other day I read, as New Year Resolutions for everybody, something I have brought with me for you. You are living up to all they express in your daily conduct in this work of reform. Here they are:

Resolved, that in the year 1922 I will think things out.

That I will be wise enough to withhold judgment until I have all of the facts and that I will be sure the facts are genuine.

That I will not permit my solid judgment to be swayed by my personal feeling and that I will spurn every effort of self-seekers to gain my favor by attempting to arouse my prejudices.

That I will do my own thinking and not permit myself to be stampeded into any opinion by anyone on any pretext whatsoever.

And so God giving me courage, I will be a solid American citizen, unafraid, going forward with faith, believing in my country and my fellowmen, doing unto others as I would have others do unto me.

I thank you one and all.

CURRENT NOTES AND PROFESSIONAL PAPERS

"A New Electric Immersible Pump"—(A description of the new pump patented by Mr. Reed Cooper of London and built for General Duty in the Naval Dockyards of Japan.)—*The Marine Engineer and Naval Architect*, October, 1922.

"Lubrication"—(A technical discussion of the subject, from the Research Laboratory of Applied Chemistry), by Prof. R. E. Wilson and Daniel P. Barnard, in *The Technical Engineering News*, October, 1922.

"Bearing Design and Lubrication"—(An analysis of pressure distribution, effect of variation of pressure and velocity on the coefficient of friction, and the design of modern bearings as applied to motion.) by William Foot, Power Engineering Department Westinghouse Co., in *The Electric Journal*, September, 1922.

"The Washington Conference and Far East Questions"—(A brief survey of the conference as related to far east questions.) by the Rt. Hon. Sir John N. Jordan, G. C. I. E., British Minister to Peking 1906-1920, in *The Quarterly Review*, July, 1922.

"Great Britain and the United States"—(An Englishman's idea of the eccentricities of American policies during the World War, Paris Conference, and Washington Conference) by J. A. Spender, in *The Edinburgh Review*, July, 1922.

"Reduction of Armaments: Our Military Position"—(An argument against Lord Esher's proposals for disarmament), by Brig. General F. G. S. Stone, C. M. G. and Capt. G. S. C. Swinton in *The Nineteenth Century*, October, 1922.

Pertinent Articles in:—

The North American Review, for November:
"The New Mediterranean," by Bruno Roselli.

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"Our Merchant Flag on The Seas," by Albert D. Lasker.
"Radio Marvels of the Modern Navy," by C. A. Tinker.
"Atlantic and Pacific Sea Power," by W. H. Gardiner.

Revue des Deuse Mondes, for October:
"Un Programme de Renovation Navale," by René La Bruyère.

La Revue Maritime, for September:
"Le Droit et les forces," by Coutr. de la marine A. Le Héuaff.

NOTES ON INTERNATIONAL AFFAIRS

FROM SEPTEMBER 25 TO OCTOBER 25

PREPARED BY

ALLAN WESTCOTT, Professor, U. S. Naval Academy

NEAR EAST

ARMISTICE SIGNED AT MUDANIA.—On October 11 an armistice agreement ending hostilities between Greece and the Turkish Nationalists was signed at Mudania, on the Sea of Marmora, by military representatives of the Turks and the Allied Powers. The terms were those previously agreed upon by Great Britain and France, and presented by General Harrington, the British representative, on behalf of the Allies. The armistice made the following provisions:

1. Greek evacuation of Eastern Thrace within fifteen days under supervision of Allied missions and troops, and transfer of civil control to Turkey within thirty days.

2. The Turks to be allowed 8,000 gendarmerie in Thrace (2,000 originally proposed by the Allies) to reinforce the civil authorities.

3. Allied missions and forces to be withdrawn within thirty days after the Greek evacuation.

4. New neutral zones of Allied occupation established in the Chanak and Ismid areas (the line running about fifteen kilometers from the coast of the Dardanelles and forty kilometers from the coast of the Bosphorus); and the Constantinople neutral zone to extend about thirty miles west of the Tchatalja line.

5. The western boundary of the Turkish possessions in Thrace to follow the Maritza river from its mouth to the Bulgarian boundary.

The Greek delegates refused to sign this agreement, but the fulfilment of its terms by Greece was guaranteed by the Allied powers. Greek military evacuation of Thrace began on October 15, and was accompanied by an exodus of a large part of the 500,000 Greek population.

DETAILS OF NEGOTIATIONS.—On September 29 the Turkish National Assembly replied favorably to the Allied joint Note of September 23, and in accordance with this note the armistice conference met at Mudania on October 3, with military representatives of Great Britain, France, Italy, Greece, and the Turkish Nationalists.

The Turkish demands presented by General Ismet Pasha and calling for evacuation of Thrace within eight days were declared unacceptable.

After a rupture on October 5, the conference met again on October 7, with a more conciliatory attitude on the part of the Turks.

In the meantime Foreign Minister Curzon and M. Poincaré met in Paris and reached an agreement upon the terms which were subsequently accepted. After submission to the Turkish Assembly, these terms were approved and embodied in an armistice agreement as stated above.

NEAR EAST PEACE CONFERENCE.—In accordance with the Allied joint Note of September 23, accepted by the Turks, a peace conference was to follow the Mudania armistice. The date of this conference was later set for November 20, and Lausanne, Switzerland approved as the meeting place. The idea of a preliminary Allied conference to settle upon financial and economic terms for Turkey was abandoned.

NEW RÉGIME IN GREECE.—Following the abdication of Constantine of Greece and the accession to the throne of his son George, former Premier Venizelos accepted the duty of special Greek ambassador in foreign capitals, though he refused to return to Athens and resume a leading rôle in Greek politics. M. Politis, who served as Foreign Minister under Venizelos, accepted this office in the new government. Parliamentary elections were set for November 13. The British, Belgian, Italian, and other diplomatic representatives at once visited the palace, indicating a favorable attitude toward the governmental change.

GREAT BRITAIN

CHANGE OF MINISTRY.—A meeting of Conservative members of parliament at Carlton House, London, on October 19, decided by a vote of 187 to 87 to enter the next elections as a separate party with its own leader and program. This decision ended the Liberal-Conservative coalition which had supported the Lloyd George Ministry since 1916. It was made against the opposition of Mr. Austin Chamberlain, Lord Balfour, and other leaders of the independent wing of the party, who argued that separation of the older parties would throw the government ultimately into the hands of the Labor Party. On the other hand Mr. Bonar Law and other Conservatives held that Premier Lloyd George had lost the confidence of the country, and that it was more important for the Conservative party to stand together on its own platform, than to win the election by a coalition.

On October 19 Mr. Lloyd George called on the King to present the resignation of his cabinet. Mr. Bonar Law was requested to form a new ministry with assurance of the continuance of Lord Curzon as Minister of Foreign Affairs. The new premier asked the king to dissolve parliament and call for elections on November 13.

THE LLOYD GEORGE MINISTRY.—Of the four premier statesmen who conducted the World War to a successful termination in the autumn of 1918 and, in the new year, convened at the Paris Peace Conference as the "Big Four," David Lloyd George is the last to retire. The first was

Signor Orlando of Italy, who was defeated at Montecitorio in the following June on account of his failure to have his Government's views prevail at the conference. Clemenceau, after having signed the principal treaties of peace retired from office in January, 1920. In the following March the United States Senate failed to ratify the treaties negotiated by President Wilson at Paris and in November his party was defeated in the National election.

All the four allied and associated nations indicated, with the exception of the United States, had conducted the war by means of coalition governments which, beginning after the outbreak of hostilities, by collections of the most eminent men, whatever their politics, changed as the exigiencies of political and military affairs demanded, from political coalition ministries of multiple portfolios to war cabinets of greater centralized power at home and greater prestige, if not authority, abroad.

At the beginning of December, 1916, principally owing to the attacks of the *Northcliffe* press, it had become a public conviction in the United Kingdom that the Asquith Government in which Lloyd George had been successively Chancellor of the Exchequer, and as such had prepared the first war budget of November, 1914, and then as Minister of Munitions, when the first coalition was formed in May, 1915, was not conducting the war as intensively as the circumstances warranted. Lloyd George writing to the Prime Minister threatened to resign unless the conduct of the war should be placed in the hands of the committee of four which did not include Mr. Asquith. Mr. Asquith declined and so the ministry was formed under Lloyd George with Bonar Law as his partner. The Government so formed had not only the support of those Unionists and nearly all those Liberals who had been supporting the Asquith Government, but also of the Labor Party.

Although Lloyd George had continued to advocate a neutral policy for the Government while Sir Edward Grey, as the British Foreign Minister, was attempting to prevent the great war in the last days of July, 1914, nevertheless, he had at the time of the Agadir crisis in July, 1911, made an eloquent speech in defense of the empire, and when a British declaration of war became inevitable owing to Germany's invasion of Belgium, he had at once begun, as Chancellor of the Exchequer, to conduct British finances in a masterly manner. Later as Minister of Munitions he had gained public confidence quite as much by his speeches as by his actions.

Prior to December, 1916, the Cabinet had consisted of the political chiefs of the principal Government departments, exceeding twenty in number. With the formation of the Lloyd George Government the Cabinet was reduced to six. This was the Cabinet which became known as the "War Cabinet," and, as occasion required, was expanded into the "Imperial War Cabinet" by the inclusion of the Colonial Prime Ministers and other representatives of the various parts of the empire. The powers of this Cabinet had so expanded that in July, 1918, just at the time of the beginning of the Foch counter-offensive, each Dominion Prime Minister had the right to nominate a Cabinet Minister, either as resident or visitor, to represent him at the meetings held between the plenary sessions. From about the same date began the assembly of the political heads of departments known as the "Standing Committee of Home Affairs," which dealt with internal policy alone. This committee, together with the original "War Cabinet," was dissolved in October, 1919, and a full Cabinet of about twenty members was re-established.

A general election was held on December 14, 1918, with the result that, while seventy-three Sinn Feiners had been electd, who declined to take their seats, the Government, in spite of the deflections of the Labor Party, which henceforth were to become more pronounced, was able to control

471 votes in the Commons out of a total of 707.—*New York Times*, October, 1922.

PROCEEDINGS OF IRISH PARLIAMENT.—The Irish Parliament on October 3 proclaimed amnesty to political offenders to extend until October 15. As no advantage of this offer was taken by the opposition, military operations were resumed more actively after that date.

In parliamentary committee, progress on the draft of the new Irish Constitution proceeded with little difficulty and it was regarded as certain of adoption without noteworthy change. Art. XVII, containing the much-discussed oath for members of parliament, was approved by a large majority.

UNITED STATES

CANADA TO NEGOTIATE FRONTIER TREATY.—*Washington, October 16.* In recognition of Canada's particular interest in maintenance of amicable relations with the United States, the British Government has decided to authorize the Canadians to negotiate directly with the American State Department in the framing of the new treaty to regulate naval strength on the Great Lakes. In the near future a representative of the Canadian Government is expected in Washington to begin these negotiations, the foundations for which were laid during the visit here last July of Premier McKenzie King.

The matter of naval vessels on the lakes will probably be only one of several subjects covered by the new treaty, which is now expected to supplant entirely the treaty of 1817. It is understood that there is no disposition on either side to increase naval armament on the lakes beyond the needs of militia training and customs law enforcement, but it is probable an effort will be made to define zones in the lakes wherein customs and militia vessels may operate lawfully even where purely territorial waters are involved.—*New York Times*, 17 October, 1922.

NO EXTENSION OF THREE-MILE LIMIT.—*Washington, October 16.* The British Government today rejected the American Government's proposal for a treaty between the two nations under which the authorities of each would be authorized to exercise beyond the three-mile limit of territorial water the right of search for the purpose of preventing the smuggling of liquor into the United States.

The proposal for such a treaty was submitted by Secretary Hughes on June 26, in a note to the British Ambassador, Sir Auckland Geddes, seeking co-operation between the British and American Governments against persons engaged in illicit liquor trade from the Bahamas and other British possessions in violation of American constitutional and statutory provisions.

The outstanding feature of the treaty was a reciprocal provision authorizing each Government to exercise a right of search of vessels of the other beyond the three-mile limit of territorial waters to the extent of twelve miles from the shore.

Great Britain's refusal to acquiesce in the proposal treaty is based on the time-honored principle under which the British Government has opposed the search in time of peace of British vessels anywhere on the high seas outside the three-mile limit. The note delivered by Ambassador Geddes to Secretary Hughes asserts that Great Britain has always consistently opposed any extension of the three-mile limit and cannot "properly acquiesce in order to meet a temporary emergency in the

abandonment of a principle to which they attach great importance."—*New York Times*, 17 August, 1922.

HAGUE COURT DECISION AGAINST UNITED STATES.—On October 13 the Hague Court of Arbitration announced the award to Norway of $12,000,000 for ships requisitioned by the United States in the World War. Norway had presented claims for $13,000,000 plus interest, and the United States had recognized liability for $2,500,000.

Although the convention establishing the Hague Court does not provide for protest of its decisions, the United States arbitrator, Chandler P. Anderson, absented himself when the decision was announced and sent a letter declaring that the court had disregarded the terms of submission and exceeded the authority conferred by the special agreement of June 30.

The last similar instance of protest was by a Japanese twenty years ago.

GERMANY

FURTHER REPARATION DISCUSSIONS.—The British plan for further adjustment of the reparation problem, as presented by Sir John Bradbury to the Reparation Commission in October, was in general terms a five-year moratorium for Germany. On the other hand, a French Memorandum presented on October 10, proposed: (1) Complete and rigid control of German finances by the creditor nations, including power to veto expenditures, regulate taxation, and dictate the arrangement of the budgets of the various German states; (2) limitation of the power of the Reparation Commission to the application of new guarantees and reforms, leaving the settlement of more comprehensive issues to an international conference. It was the French view that this should be the business of the proposed Brussels Conference in December.

PRESIDENT EBERT'S TERM EXTENDED.—In the middle of October the Reichstag passed a measure altering the Constitution so as to extend President Ebert's term of office until 1926. Herr Ebert was elected provisional president by the Weimar National Assembly in 1919, pending a regular election. The extension was decided upon in order to avoid the dangers and difficulties of a popular election at the present time.

LIMITATION OF ARMAMENTS.—*Geneva, September 28.* After spending two years in laying foundations, the League of Nations has now faced squarely up to the problem of disarmament. It was perhaps inevitable that the early stages of the work should show disappointingly slow progress, but the vigor Lord Robert Cecil managed to infuse into the commission concerned, as soon as he became a member of it, suggests that if he had been there sooner the commission might have moved a little faster.

However that may be, it has moved well in the past three months, and with its scheme definitely approved by the League Assembly, the nations of Europe, and some other nations, too, have now to say yes or no to a practical proposition, the acceptance of which would to all appearance bring to the overburdened citizens of every country the first hope of relief they could clutch at since the Armistice.

So long as nations believe that they have no means of security but force, they will clearly not reduce the force they command while dangers manifestly impend. Poland, Rumania, Jugo-Slavia, Czecho-Slovakia would and could return no other answer than that to the proposals of the armament reducers. But if another security could be substituted for the security conferred by a state's own national army the case might be altogether different. That has been recognized by Lord Robert and made the basis of his scheme.

If one state in isolation cannot reduce its army, a number of states in combination may well be strong enough to protect one another against any threatened aggression. But the number of states so binding themselves in a defensive guarantee must be large enough. It may well be doubted, for example, whether the four states mentioned above would feel that even with the completest understanding between themselves, they could reduce their armies while the intentions of Russia are unknown. If, on the other hand, they had behind them France, and Italy, and Britain, and Holland, and Spain, and Belgium, then a new situation would be created and practically every state of Europe could reduce its forces to something below their present level.

That is the scheme the League of Nations Assembly has approved, and matters have gone so far that a competent commission has been instructed to prepare a draft treaty embodying these principles in the form of obligations which the several nations can thereupon be invited to accept.

But the League is pushing forward on other lines at the same time. In deciding to convene at Geneva next May (the date was chosen so as to fall after the Pan-American Congress), a naval conference, to which all states shall be invited, the League ranges itself directly in line with the organizers of the Washington parley and the authors of the pacts there concluded. It is a matter for satisfaction that Brazil, which at first took exception to this proposal, has withdrawn its obections and declared its intention of attending the conference.

Finally, one more endeavor is being made to overcome the obstacles placed in the way of a limitation of instruments of war by the decision of the United States Government not to ratify the Arms Traffic Convention of St. Germain.

The League is calling a further conference to deal with these problems, and encouraged by the declaration of the United States Government that, though it will not ratify the St. Germain convention, it cordially approves the objects the convention has in view; it intends to invite the United States both to state its objections to the convention and to be represented at the conference.—*Baltimore Sun*, 14 August, 1922.

RELIEF FOR AUSTRIA.—*Geneva, October 4* (Associated Press)—Ignaz Seipel, the Austrian Chancellor, and the representatives of Great Britain, France and Italy this afternoon signed the protocol making effective the plan of the League of Nations to save Austria.

The protocol consists of three documents. The first is a declaration by Great Britain, France, Italy and Czecho-Slovakia, the principal guarantors of the loan which will be made to Austria, that they will respect the territorial integrity, independence and sovereignty of Austria and will seek no special or exclusive financial or economic advantages that would compromise Austria's independence.

The other two documents authorize Austria to issue for sale bonds sufficient to produce the equivalent of a maximum of 650,000,000 gold crowns, and provide for the guarantee of interest on the sinking fund by Great Britain, France, Italy and Czecho-Slovakia of eighty per cent of that sum. Austria pledges for the payment of the interest on the bonds her

customs receipts and the tobacco monopoly, and agrees to undertake reforms necessary to balance her budget.

The Austrian Government accepts supervision in the application of reforms by a Commissioner of the League of Nations, whose authorization will be necessary before the Austrian Treasury proceeds to realize on loans guaranteed by the powers. It abandons all rights to issue paper money or negotiate loans, and accepts supervision by a commission composed of representatives of each nation guaranteeing a portion of the loan.

FRANCE

RUSSIAN RAPPROCHEMENT WITH FRANCE.—As a result of divergence between Great Britain and France, especially over German reparations and Near East problems, French political sentiment has shown a tendency to revive the old understanding with Russia, in spite of the difference between Soviet Russia and the Russia before the war. Indication of this trend of political alignment was the importance attached to the visit to Russia of M. Herriot, the President of the French Radical Socialist Party. M. Herriot declared the Russians were willing to recognize the Russian debt to France, and that thus the chief barrier to an understanding was removed.

FAR EAST

JAPANESE EVACUATION OF VLADIVOSTOK.—Japanese evacuation of troops from the Vladivostok district began on October 6, and was completed on October 26. With the withdrawal of the Japanese, the "white" government in Vladivostok under General Dieterichs was exposed to overthrow by "red" forces of the Far Eastern Republic which closed in on the city. American and British marines were landed on October 20 to protect foreign lives and property.

REVIEW OF BOOKS

INTERNATIONAL RELATIONS, by James Bryce. (The Macmillan Company, New York. $2.50) A Review by Rear Admiral Caspar F. Goodrich, U. S. N.

This is the swan song of one of the greatest authorities on the subject defined in the title of a rarely fascinating and interesting book. Not only did Lord Bryce know his topic from the dawn of history to the present day, but he could talk of it gracefully and engagingly as well. These pages are the reproduction in print of lectures delivered during the summer of 1921, at the annual conference on international affairs held at Williamstown, Mass.; for force and attractiveness they lack nothing but the voice and charm of the speaker, now gone from us forever.

Lord Bryce asked why it is that jealousy, suspicion, envy and hatred persist in the intercourse between states, even between those recently drawn together by a great and common danger; and what can be done to make war less frequent and peace more prolonged. As ought have been expected from the author of the *Holy Roman Empire*, he seeks in history the reasons for the discord which but too generally prevails, and for suggestions of methods through which this discord may be replaced by mutual understanding and co-operation.

In his first lecture, Bryce goes back to the earliest times when every man was independent of all others, living by the spoils of the chase, taking from his neighbor what he liked, if he could, and defending his own against aggressors. This delightfully simple condition of life was known to the ancient philosophers as the "State of Nature." As men found it expedient to form associations of their kin for purposes of offense and defense, there came into being clans, tribes, and nations, each marked by the sacrifice of individual freedom of action in return for protection by the community as a whole. At every step, however, the clans, the tribes or the nations are seen to be in the "State of Nature" to each other and this is true today. "Although in civilized countries every individual is now under law and not in a State of Nature towards his fellow men, every political community, whatever its form, be it republican or monarchical, is in a State of Nature towards every other community."

There is no extraneous power which can dictate to a nation the course it should pursue under certain circumstances, still less enforce a keeping of the peace. Even so mild a philosopher as the author has tacitly but not explicitly to recognize the fundamental fact that the judgments of

courts, civil and criminal, find acceptance, not because of an enlightened public opinion, but because back of them are arrayed the local police, the state militia, and finally the full armed strength of the entire land. In effect, justice is based on force and not, as the Stoics would have it, upon man's having attained his true nature with his passions subdued by reason, as in the mythical Golden Age, so often lauded by the dreamer or the revolutionist, and never actually achieved. Facing this grim truth, that every political community stands in a State of Nature toward all others, there must either be erected some authority above them all or there must be an improvement, not so much in human nature itself, as in a change of peoples' attitude toward foreign relations, through making them realize that they will gain more by co-operation than by conflict.

The author's study of the causes of the Great War describes the nervous tension under which all the European chancelleries labored, due to the fateful seizure of Alsace and Lorraine in 1871, to the constant growth of armaments, and to the anxieties the latter aroused on each side of the frontiers of adjoining states; but it seems to lay insufficient stress on the openly avowed purpose of Germany to establish world dominion.

With the treaties negotiated at Paris, he is thoroughly dissatisfied, as well he might be, since they have created new states without any sound basis in race for the determination of their boundaries. The particulars in which these treaties err are worthy of deep consideration, fraught as they are with terrible possibilities. He says, "Why the Turkish Government, which had in 1915 massacred a million of its Christian subjects, women as well as men, under circumstances of brutality and cruelty unsurpassed in the history of even the blood-stained East . . . . should have been treated by the Allies with such extraordinary lenity and should now have fresh indulgences offered to it by the proposed modifications in the Treaty of Sevres—these are mysteries, the explanation whereof is probably known to some of you as it is to me. But the secret is one which . . . . is too sacred for me to mention." This quotation will give an idea of Bryce's general attitude towards the bungling work done in Paris in 1919. He sounds a note of warning that a better peace must be secured "by removing the dangers and injustices which bode future wars." "Legally," he says, "there is peace; but temperamentally there is war." Still, it must be said that some of the causes of earlier wars have disappeared since Hapsburgs, Hohenzollerns, and other dynasties have ceased to control foreign relations, and nations no longer foster enmity along religious lines, although among Asiatics this sentiment has not lost all its potency for evil as recent events demonstrate. The discussion in his chapter on the Causes Making for War or Peace deserves careful reading, however lacking it may be in encouragement for the future.

Naturally, Bryce cherished the hope that a healthy public opinion might, through straight-forward diplomacy, give to International Law the power which is denied it by the absence of force, and he sought ways and means to bring about this much to be desired result. This hope, it may be recalled is, or was, shared by our own Mr. Root. Its validity is unchal-

lenged insofar as peoples are concerned whose speech and traditions are identical, but, with those of different tongues and different modes of thought, this validity remains a thing to be hoped for rather than expected.

The lecture on the Morality of States is most illuminating if somewhat depressing. One might almost say that a state has no morals at all. At least history proves that selfish interest has led to most abominable assaults on the coveted territory of neighbors. The story of Naboth's vineyard is reproduced on tribal or national lines throughout the ages, our own not excepted. Bryce attributes this lack of morality to the absence of that responsibility between states which exists among individuals who live under the reign of law. "Few men avow, and of course nearly all moralists condemn, the doctrine that the end justifies the means. But it is widely followed in public life, and oddly enough, those who think themselves idealists, the men who live and fight for the thing, whatever it may be, that they put above everything else, and call a Sacred Cause, frequently apply this insidious doctrine." For this reason, Bryce deprecates the entrance into diplomatic discussions of the whole body corporate. What it desires must, of course, guide its representatives, but the negotiations are better left to the latter, who act in its name and then present the results to it for ratification or rejection.

The author believed in conferences. In this respect he resembles the late Marquis of Salisbury who is said to have remarked, "There's no question which cannot be settled by four men sitting around a table." Putting aside the erecting of an international police force as a practical impossibility, there is indeed no other way open to the bringing about of a better understanding between sovereign powers. The road bristles with difficulties as the conduct of Germany amply demonstrated at the Hague. Still, patience and renewed efforts may be counted upon to effect substantial progress. The creation of a Court of Arbitration was followed by results of encouraging promise, while what was done by the recent Washington Conference bodes well, however short it fell of the desired maximum.

Wisely, it seems to me, Bryce rejects the proposition of a World Federation for the excellent reason that each member would have either an equal voice in the management or one based on population. In the latter case, the Western World would be swamped by China, or by a combination of states of which the citizens would be illiterate, or moved by the savage impulse of ignorance. Whether Bryce condemned the League of Nations, he does not state in positive terms but the inference is inescapable that it found no favor in his eyes, as one reads his analysis of a possible Combination of Powers. We must all agree with him, for such is our own attitude, as shown in countless instances, when he says, "Every civilized nation, since its fortunes are inextricably involved with the good or evil fortunes of every other, is bound for its own sake to an interest in the well-being of others and to help them, in whatever way

it finds best, to avoid or recover from disasters. The greatest disaster is war, more terrible in its consequences than earthquakes in Sicily, or famines in China." It behooves us therefore to do all in our power to persuade other nations to seek a solution of their quarrels without resort to arms for the very good reason that, if they do not, upon us will fall a repetition of our present experience of having to help them escape from or to bear the burdens resulting from their unrestrained bellicose propensities.

There can be no doubt that a deeper sympathy with foreigners and a wider understanding of their problems, such as Bryce advocates, would go far to aid in the maintenance of peace, but we are quite within our rights when we condition our assistance upon the real, not the merely verbally expressed acceptance of the obligations on their part to cultivate the like charity. We hold the financial whip and we should not hesitate to crack it when we see a government spending its revenue on armies while its people starve. This reflection is mine, not Bryce's, I need hardly say. For all this brilliant ratiocination, I cannot conscientiously recommend a lack of military preparedness, which has, time and time again, cost us heavily in every way. We may counsel arbitration and practice it whenever we can, but until all nations accept it loyally, our advice is likely to have weight only if we have more than mere words to back it.

The book under review is as fascinating as a best seller. It brings before the eye a panorama of human life from the days of the cave man through those of Greece and Rome and the Middle Ages, down to the present. It revives our long forgotten school lessons and puts into history a vitality which as boys, and indeed as men, we never suspected. I urge my brother officers to read it, confident that when they do, they will thank me for having brought it to their notice.

NAVAL OPERATIONS, Vol. II. Text and Maps. By Sir Julian S. Corbett, Longmans, Green & Co. Price $7.50. 1921. A Review by Rear Admiral Albert Gleaves, U. S. Navy.

More than half of the second volume of the Naval Operations Series is devoted to the Dardanelles Operations, from the inception of that mad adventure in January, 1915, to the beginning of the campaign as it was carried on by the Army under Sir Ian Hamilton.

The period covered by this big book of nearly 500 pages is the half year following the Falkland Islands action. It includes principally the loss of the *Formidable*, the Yorkshire raid, the Dogger Bank battle, the progress of the *U*-boat campaign and the loss of the *Lusitania*. The volume ends with the resignation of Lord Fisher and Mr. Churchill, and the formation of the Coalition Cabinet. In the discussion of the British blockade and the German war zone, a fair statement of the American protest is presented. It will be recalled that there was much irritation in this country over British detention of certain American ships and

American mail. These questions, the author states, "were settled out of court." This subject will be referred to later in this article.

The book is as interesting as a novel, which as some one has said is to compliment the novel. The author never indulges in superlatives, and rarely in adjectives, but at times his admiration of the British Navy and its splendid work leads him away from cold and formal narrative to something like enthusiasm. For instance in describing the loss of the *Formidable*, he says, "—of Captain Loxley nothing more was seen. Survivors saw him standing with his terrier on the bridge till the last, giving his orders as coolly as though the ship were going in harbor, cheering and steadying the men, praising the officers for every smart piece of work, and his reward was to see perfect discipline and alacrity maintained to the end." Again in telling of the night boat expedition which succeeded in destroying the *E-15* which had grounded under one of the forts in the Dardanelles, he says, "—it was a gallant feat, finely executed and one which it is pleasant to know extorted high praise from the enemy," and quotes a German officer in Constantinople as saying when referring to it, "I take off my hat to the British Navy."

As the subjects treated in this volume have begotten libraries of discussion and recriminations, the author again reminds his readers that although the Admiralty has placed the official documents at his disposal he alone is responsible for the opinions expressed. He emphatically denies that anything in the nature of censorship has been exercised by the Admiralty.

After the destruction of Admiral Von Spee's squadron at the Falklands, a redistribution of the home fleets was effected, and the war entered a new phase. The *Dresden* had not been captured, the mystery of the *Karlsruhe* was not solved and two big armed merchant liners, the *Prinz Eitel-Friedrich* and the *Kronz Prinz Wilhelm*, were still at large on the high seas on the southern and western trade routes; therefore in the Western Atlantic there was no let-up in vigilance on the part of the British cruisers.

When the news of Sturdee's victory was received in London, it was natural to believe that the Germans would take advantage of the reduced force of the Grand Fleet to make a descent somewhere on the East Coast of England. It was Admiral Jellicoe's problem to estimate the situation, anticipate the raid and to decide upon the most probable point of attack. That the Germans were preparing to come out was known at the Admiralty.

It appears that the disposition of the forces was made by the Admiralty, although the rendezvous, "a matter of no less difficulty than importance," was left to the commander-in-chief.

On the part of the Germans, there can be no doubt that their intention was to give an exhibition of Teutonic frightfulness, and to strike such fear into the hearts of the enemy that recruiting would be paralyzed.

The High Seas Fleet had been held inside the Bight ever since the

Heligoland action by personal orders of the Kaiser, and it was only on the initiative of Admiral Von Ingenohl that the three battle squadrons were sent out to support the raiding force, which was under the command of Admiral Von Hipper, and was composed of the four battle cruisers, the heavy cruiser *Blucher*, and the second Scouting Division of light cruisers and destroyers. The raiders sailed from Cuxhaven to the rendezvous December 15, in the afternoon, and after dark they proceeded on their mission, followed by the battle squadron.

Unopposed they passed through the twenty-mile gap in the mine fields which they had planted off the English coast and at 8:00 the next morning, having divided the force, Von Hipper began the bombardment simultaneously of Hartlepool and Scarborough, the *Seydlitz, Moltke* and *Blucher* off Hartlepool and the *Derfflinger, Von der Tann* and *Kolberg* off Scarborough. The last named port was undefended, but Hartlepool had a battery of 6-inch guns and was also a flotilla station. The firing lasted about a half hour. Little military damage was done, but eighty-six people on shore were killed and over 400 wounded. Von Hipper then reunited his forces and started back home.

The rendezvous appointed by Admiral Jellicoe was twenty-five miles south east of the S. W. patch or horn of Dogger Bank and roughly halfway between Flamborough Head and Heligoland. The English destroyers made contact with the German destroyer screen about 5:00 A. M. but the presence of the English destroyers was known to Admiral Von Ingenohl an hour earlier. Obsessed with the fear of losses of his heavy ships by torpedo attacks, and burdened by his peremptory orders not to risk them except under favorable circumstances, and evidently forgetting that ships were made to take risks in battle, he deliberately abandoned the raiding forces which were well over on the English coast, and to use Sir Julian's words "fairly turned tail and made for home."

The day dawned clear, and began with a smooth sea. But a N. W. wind increasing to gale force soon sprang up, the visibility decreased, and the seas became short and steep, making it difficult for the destroyers. Although neither side knew it, at 6 A. M. G. M. T. the two main fleets were only about fifty miles apart, but they were destined not to meet that day.

While Admiral Warrender, who was the Senior Officer, and Admiral Beatty were trying to locate the enemy in the vicinity of Dogger Bank, the German squadrons had already reached the English coast. It was not until 9:30 that the English Admirals received a radio from the Admiralty that the raid had been accomplished; it was now their problem to intercept and destroy the raiders on their return to base.

Favored by the thick weather, Von Hipper made an easy run of it. First he steered a little north of east until after 12 noon, then he ran a few miles S. E., then turned to the N. N. E. for about twenty-five miles northward of Dogger Bank, and so back to the Bight. The official chart shows the English ships clustered around the Bank, and the unobstructed homeward track of the raiders well clear of them.

Sir Julian comments thus: "Two of the most efficient and powerful British Squadrons with an adequate force of scouting vessels knowing approximately what to expect and operating in an area strictly limited by the possibilities of the situation, had failed to bring to action an enemy who was operating in close conformity with our appreciation and with whose advanced screen contact had been established."

Admiral Beatty was ordered to discontinue the chase at 3:47. In this affair the submarines were stationed off Terschelling by order of the Admiralty, but took no part in the action except one torpedo fired from the *E-11* which missed.

The Germans were bitterly disappointed. Von Tirpitz said that, "Ingenohl had the fate of Germany in the palm of his hand. I boil with inward emotion whenever I think of it." Von Scheer says, "It is extremely probable that by continuing in our original direction the two courses would have crossed within sight of each other during the morning." The author says, "In all the war there is no action which gives deeper cause for reflection on the conduct of operations at sea. On our own side the disappointment was profound." Bellairs, always a severe critic of the Grand Fleet, writes, "—does it never occur to the mechanical, (school) which wants war to be all certainties, that the sea belongs to the most skillful and artful wooer who adapts himself to her variable moods."

The battle of Dogger Bank on January 24, 1915, was a battle of battle cruisers and destroyers. The story as told by Sir Julian, which differs in some respects from some other writers* as well as from the official report as given out by the Admiralty soon after the fight, must be accepted as authoritative.

The action was brought about by an early morning collision between the advance screen of Von Hipper standing to the N. W. and that of Admiral Beatty steaming S. E. Whether the German Admiral was bound out for a northern raid, or whether he was making a reconnaissance, or whether the German sortie was a diversion to facilitate an invasion (which some Dutch critics thought) is immaterial. The reappearance of the German ships in the North Sea was not unexpected and Jellicoe was looking for them. At the time Beatty sighted them, they had turned to the southward toward their base. Jellicoe with the battle squadron from Scapa was coming down from the North and at 8 A. M. was 150 miles from the scene of action. There seemed to be a chance for a decisive engagement.

NOTE: H. C. O'Neill, *A History of the War*. London. T. C. and E. C. Tach. 1920.

Filson Young's brilliant account is that of an eye witness on board Admiral Beatty's Flagship the *Lion*. See "With the Battle Cruisers." Mr. Young's track charts differ from Sir Julian Corbett's. As a rule, however, track charts of ships during a battle are not to be taken too seriously.

The *Lion*, Flagship of Admiral Beatty, sighted gun flashes at 7:20 A. M. bearing S. S. E. The English ships were in column ahead, the *Lion*, *Tiger*, *Princess Royal*, *New Zealand* and *Indomitable*. At 7:50 Beatty made out the German battle cruisers on his port bow fourteen miles distant. He began working up speed to 28 knots, and steered a course parallel to the enemy, and clear of his wake in order to avoid mines. Just before 9 o'clock Beatty tried a ranging shot at 20,000 yards and shortly afterwards all the English vessels opened fire on the German sternmost ship, the *Blucher*. For the next two hours there raged a battle which will always hold a unique place in the history of sea warfare on account of a series of untoward occurrences by which a superior force not only failed to score a decisive victory, but enabled a crippled enemy to escape at the moment when his defeat seemed to be a question of only a few mintues. At 9:25 the great speed of the English had brought them close enough to engage opposite numbers. The *Tiger* did not understand the signal to do this and continued to fire on the German leader with the *Lion*. As the *Princess Royal* had shifted to the third German ship, the *Moltke*, the second German ship, the *Derfflinger*, was not under fire at all, and as the Germans adhered to their doctrine of concentration of fire on the van, the *Lion* was not only under her fierce and undisturbed fire but of that also of the *Seydlitz*, *Moltke* and the *Blucher*.

It is to be noted that the English being to the leeward were getting the German destroyer smoke, and for a time Beatty lost sight of the enemy. Fearing a torpedo attack the English turned away two points at 9:40. A few minutes later the *Lion* began to be heavily hit, and about the same time the *Blucher*, which had severely suffered, dropped astern on fire, disabled but fighting gallantly until she sank at 12:13. At 10:54 submarines were reported on the starboard bow, and Beatty turned his ships eight points to port, away from the danger *which was forward of his beam*, and incidentally across the wake of the fleeing enemy, then at 11:2 back again to N. E. to avoid mines. At this time, however, the *Lion* was struck a blow that put her out of action, for her speed was knocked down to 15 knots and she was forced to drop out. Just before this happened Beatty, whose wireless was out of commission, and all but two of his signal halyards shot away, had hoisted the signal N. E. and then "Keep nearer the enemy," a signal Nelson made at Trafalgar. When the *Lion* left the formation, the command automatically devolved upon the second in command. Beatty had made N. E. but this was not hauled down when he made "Attack the enemy's rear." The flags were end on, and the "Keep closer to the enemy" signal was not made out, and Admiral Moore interpreted the signal to mean "Attack enemy's rear bearing N. E." and proceeded with all the ships to attack the helpless *Blucher*. Von Hipper continued his flight unpursued.

The failure to get the signals to keep closer to the enemy, and the misinterpretation of the signal which did get through, cost the English the battle. Sir Julian Corbett refrains from criticism; perhaps he realized the uselessness of indulging in that world-old game of what-might-have

been. He likewise drops the mantle of charity over the German failure, and says only their attempt was "timorous." Lord Sidmouth remarks "the Germans lost a great opportunity."* But so also did the English.

After the battle a controversy started over Admiral Beatty's despatch reporting the action, as given out by the Admiralty. The fact is only referred to here as a matter of history, although Corbett does not mention it.

According to Mr. Young, who was on board the Flagship and attached to Admiral Beatty's staff, the Admiral sent a brief telegram to the Admiralty, which as published stated that the presence of submarines necessitated the action being broken off. The actual sentence in the original despatch was, "in view of the unknown condition of the *Lion*, and the presence of enemy's submarines, Admiral Moore considered retirement desirable at noon, and gave orders accordingly." Referring to Admiral Beatty's detailed report in February, 1915, Mr. Young says, "After some time this was returned to him in proof by the Admiralty, seventeen out of the thirty paragraphs either altered or omitted altogether." In his book, the original despatch, and the despatch as made public, are printed. "In some vital matters, 'the reports' are essentially different."

The Dardanelles Campaign originated on January 2, 1915, in a request of the Grand Duke Nicholas to Lord Kitchener to relieve the growing pressure in the Caucasus by arranging for a diversion of the Turkish Army elsewhere. The next day Kitchener reported in the affirmative, and he suggested to Lord Fisher that the navy make a demonstration at the Dardanelles as there were no troops available.

A test bombardment had been made on the forts at the entrance of the Dardanelles in November, by a combined English and French Squadron, which served no purpose other than to give warning to the Turks what they might expect later, and consequently the defenses had been strengthened. The First Lord referred the question to Admiral Carden who had succeeded Admiral Milne in command of the naval forces in the Mediterranean, and he gave it as his opinion that the forts could not be "rushed" by the navy, but "might be *forced* by extended operations," and he submitted plans.

On January 28, in spite of the opposition of Lord Fisher, the War Council decided upon a naval attack, although the grave risks of failure were freely recognized.

The attack was made by the combined forces of Admiral Carden and Admiral Guépratte. Sir Julian says, "At 9:51 on the morning of February 19, the first shot heralded the opening of the unparalleled operations which were destined to attain such vast proportions, to consume so much heroism and tragic effort, and end with such a glorious failure."

It is well to pause here to consider the old question of forts versus ships. It has been truly said that if history teaches anything, it is that it doesn't teach. In modern times, the fort has invariably had the ad-

**Quarterly Review*, April, 1922, "The Naval War."

vantage over the ship. At Alexandria for instance, although the fleet drove the Egyptians out of the fortifications, Stone Pasha* told the writer of this review a few days after the bombardment, that he had inspected the forts within two days, and with the exception of guns disabled by direct hits, the batteries could easily have been made ready for action again in a day. This agrees with Lord Sidmouth's statement, "Trained gunners could easily have beaten off the fleet at Alexandria in spite of all the gross defects of the works attacked."

Anyone who has seen the effect of ship fire on the forts at Santiago and Port Arthur, and Tsingtau, will not wonder that Lord Fisher left the council room on January 28, and was only prevented from sending in his resignation by Lord Kitchener's personal appeal for him to remain.

To return now to the narrative of the fleet attacks. The *Cornwallis* and *Triumph* opened the first action at a range of 7,700 yards, and in a few minutes the *Suffren* engaged the Kum Kale on the Asiatic side at anchor. The Flagship about noon tried two ranging shots at the Helles Fort at a distance of 15,000 to 16,000 yards. In the afternoon the bombardment continued but at shorter ranges, and all the ships were under way. At 5:20 the "General Recall" was made and the ships withdrew. The day closed with promise of success and the bombardment was to have been resumed the following day.

Unfortunately bad weather set in and continued for a week; during this interval the Turks repaired damages and Carden decided that troops were necessary; it was easier to request than to obtain. Kitchener could not understand why the navy couldn't do what he expected of it, but he did fully understand the consequences of failure to break through. It is worth mentioning here that during the interval of waiting and discussion the sea planes could not be used, "A misfortune that seriously affected the success of the work."

On February 25, the ships renewed the attack. Four ships underway worked in pairs and closed to 3,000 yards firing on Helles and Orkanie on either side of the entrance. Four ships at anchor engaged the forts between Helles and Orkanie. By 3:00 P. M. the shore batteries were silenced and then trawlers began sweeping, while the fleet returned to the anchorage.

At 8:00 the following morning, the attack was resumed and continued without opposition until 3:00 P. M. when fire was opened by concealed batteries which the sea planes had not found. At 4:00 the "General Recall" was hoisted and the ships withdrew. No attempt to land a force was made, but wrecking parties were sent ashore to blow up the guns in the deserted forts on both sides. This work, gallantly performed, brought the V. C. to Lieutenant Commander E. G. Robinson of the *Triumph*.

Operations were halted for two days by bad weather. It was now evident that a landing must be effected to clear the shores of the increasing batteries. It was also realized that if the attempt to force the

*General Charles P. Stone, formerly U. S. Army.

passage was to be abandoned, now was the time when it could be done without too much loss of face, but just then seven battalions of sailors and marines sailed for Lemnos, and the navy continued to carry on until March 10. Long range firing was useless without accurate spotting and the air forces had not been as efficient in this work as was expected. It was obvious, therefore, that close action was necessary. Then the question was how to force the mine fields which were protected by mobile guns. After careful consideration of all the difficulties it was decided to force the Narrows.

On March 17, Admiral De Robeck relieved Admiral Carden, who had been ordered home, and on the eighteenth the attack was made, but it was repulsed. Three battleships were sunk, and three more practically put out of commission. The forts were terribly hammered and the morale of the garrisons suffered equally but the ships had to retire.

Sir Ian Hamilton, who had been selected to command the Army Expeditionary Force, reached Tenedos on the evening of the seventeenth, the eve of the attack, at the same time as the last division of the French troops under General d'Armande. Both generals were in time to witness the naval fight at the Narrows.

Bad weather prevented the renewal of the attack on the nineteenth, and before the weather moderated the plans were all changed. Thenceforth the campaign was to be a combined army and navy operation, and a new phase of activities was begun.

Three weeks after the attack on the Narrows the army began landing on the beach north of Gabe Tepe—to be precise, it was 3:30 A. M. on April 25, that the picket boats with the cutters in tow cast off from the ships and steamed toward the land, and a half hour before dawn the boats with muffled oars hauled in their painters and rowed to the beach where they were greeted by rifle and machine-gun fire. Landings were made the same day at five other places, and in twenty-four hours over 33,000 men were put ashore. Lord Sidmouth says, "—it was a splendid feat of arms rendered possible only by devoted gallantry and the infinitely valuable covering fire of the ships." But it was only a footing. "The commanding ridge of Sari Bair was never occupied," and Achi Baba peak, 591 feet high, as important to the success of the landing as 203 metre hill at Port Arthur or the Henrich Berg at Tsingtau was to the Japanese, "was still two miles from our (British) front when the final withdrawal took place."

In the beginning of this article mention was made of the annoyance caused by the British detention of our mails. During the Civil War a similar controversy arose between the two countries when their status was reversed. England was the neutral and the United States the belligerent. The story is related by John Murray Forbes in his *Letters and Recollections*. Writing in the summer of 1863, from the Rhine, I think, having just left London where he was one of the many noncommissioned envoys employed in our propaganda in England, he says:

"Among my London acquaintances was Mr. Edward Ellis, a member of Parliament himself, and, I think, with one or two sons also in that body. He was a friend and adherent of Palmerston, and having a pecuniary interest in land on this side was supposed to be very well posted about American affairs. It was just at the time the controversy was going on about the letterbag of a steamer: it had been seized with the vessel carrying a cargo of munitions of war, nominally to Mexico, but undoubtedly intended for the Texan rebels. The bag must have contained proof of this, but, being under the seals of the British Post Office, was claimed by the British minister as sacred, and the dispute was going on as to what should be done with it: the condemnation of the vessel and cargo, amounting to a very large sum, depending a great deal upon the result.

"I was dining at Mr. Ellis' and while we were standing before the fire waiting for dinner to be announced, two or three of the younger members of Parliament came in and announced the 'good news' that the letterbag had been given up without being opened and removed the danger of a rupture in the friendly relations between the United States and Great Britain. This was all very polite, Mr. Adams being present and, as usual silent. I could not help, however, saying a word to this effect: 'I am very glad you like the news, but I hope you will remember one thing; that you are making a precedent which in the long future *we* intend to follow. You are now ready to introduce all possible privileges for neutrals in the carrying trade, but in the long run Great Britain is at war ten years while we are likely to be one; and whatever precedent you set now, we shall hold you to'."*

Sir Julian Corbett gives an interesting account of the unsuccessful search for the *Dresden* in the forbidding waterways of Terra del Fuego and Patagonia, and her final destruction at Juan Fernandez. When Von Spee made his *sauve qui peut* signal at the Falklands on December 8, to his light cruisers, she succeeded in escaping to Punta Arenas where she arrived on the eleventh. For three months she eluded the British squadron, although at times they were close on her heels. The *Bristol* and *Glasgow* reached Sandy Point the day after she sailed, and they hurried out to the westward hoping to run her down. The *Inflexible* swept outside the Horn and cruised up the coast as far as 43° S. when she was recalled. Admiral Stoddard in the *Carnarvon* took the east coast of Patagonia and the *Cornwall* did Staten Islands, and the Horn itself. It was trying navigation in those bleak solitudes where the long ocean swells break tremendously on the outlying rocks, and where there are so many breakers, the sea in one place is called the Milky Way. Although it was the summer season, the weather was cold, thick and misty, while the rain and sleet and snow swept violently down from the innumerable glaciers which descended to the coast line.

*John Murray Forbes', *Letters and Recollections*, edited by his daughter, Sarah Forbes Hughes, Vol. II, p. 31.

While the dauntless Englishmen were exploring the inlets and bays of a coast, "one sight of which," writes Darwin, "is enough to make a landsman dream for a week about shipwrecks, peril and death," the *Dresden* was lying quietly in the little cove charted as Hewett's Bay at the southern end of Barbara Channel where she anchored December 14. The English ships came close at times, but did not discover her. A week later the *Carnarvon* anchored at the north entrance of the channel and the *Dresden* shifted to an even more secluded anchorage on the southern shore of Santa Inez Island, where she remained undisturbed until February 15. Again, later in the month, the Admiral was within fifty miles of the chase and his tireless ships were sweeping the waterways from Beagle Channel as far north as Last Hope Inlet, where the *Bristol* damaged her rudder on an uncharted shoal.

The British Consul at Punta Arenas had good reason to believe that the German Consul was sending supplies to the *Dresden* in two tenders, and he was fairly certain of her anchorage. But neither the Admiralty nor the Admiral was convinced, and his information was discredited.

On February 13, the *Dresden*, overhauled and repaired as well as possible, ran out into the open sea, and cruised 300 miles off Coronel, where she coaled from colliers at prearranged rendezvous and sank a British ship. On the eighth of March she was at last sighted by the *Kent* who gave chase, but lost her at nightfall. On the ninth the *Dresden* reached Juan de Fernandez, and five days later she was found by the *Glasgow* and *Kent* and was destroyed at her anchorage.

The disregard of Chili's neutrality by both belligerents is a feature of the *Dresden* case: the English by searching with hostile intent the inland territorial waters of Chili, and finally attacking an enemy in a Chilian harbor; the Germans by violating the twenty-four hour limit for refreshment, and using Chilian anchorages as a base. England's prompt and courteous reply to Chili's protest, and immediate offer of compensation for all damages, soothed Chili's wounded feelings. Germany, however, paid no attention to the protest for at least six months.

We might to our advantage take a leaf from England's book on this subject. When our officers have violated neutrality they have usually been punished, as for instance in the *Trent* affair, the cutting out of the *Florida*, and the capture of the *Blanche*. There is nothing to show that Captain Luce of the *Glasgow* was even reprimanded, he was probably, and properly so, promoted. At all events the friendly relations between England and Chili were not impaired, nor was Chili's sympathy with the Allies affected. Clearly international law is on the side of the biggest battleships.

The volume closes fitly with an appreciation of Lord Fisher. When he found himself thwarted and his advice and suggestions ignored he resigned his seat as First Sea Lord. Sir Julian says: "To the country at large he was the embodiment of the old fighting energy of the navy—the man to whom we owed the organization and the strategical disposition which rendered the German fleet impotent when the long expected struggle

began, and the all embracing combination against Admiral Von Spee which had given us our only decisive success at sea." Lord Fisher's second term at the Admiralty was not long when measured by months, but it covered a momentous period in the history of the Empire, and was long enough to impress upon the people the soundness of his faith, "War is great conceptions, and quick decisions."

THE 20TH CENTURY GUIDE FOR DIESEL OPERATORS, By Rosbloom & Sawley. Western Technical Book Co. Price $15. A Review by William H. Pashley, Lieutenant Commander, U. S. Navy.

This is a disappointing book for many reasons, such as its confused arrangement, its extremely bad English, its numerous incorrect statements and the fact that it was carelessly proof read, if at all.

The authors state in the Foreword that "all data has been carefully selected to suit the person engaged in the profession or for use in the study of Internal Combustion Engineering," and that "The primary object of this valuable addition to technical publications on the subject of Internal Combustion Machinery and such information as this book contains, is to instruct those interested in the prime mover in practical form." They further state in the preface that, "Neither time nor expense has been spared in an effort to make this work a success, and by success is meant; 'A world's Standard Book'." With the above objects in view it seems a pity that loose statements such as the following are found: "The mechanical efficiency is expressed as the ratio between the effective power of the engine as measured by a brake on the engine shaft"; "In most cases there are levers by which cams are operated"; "The methods of fuel injection is a subject which can be solved and ultimately will have to be considered"; "Arguments in favor of Solid Injection as opposed to Air Injection is merely a matter of opinion"; "All bodies are supposed to be composed of minute particles so small that they can scarcely be seen by a high powered microscope"; "While the trend appears to be toward the solid injection system, nevertheless, mechanical injection is prevalent." These and innumerable other statements of the same character are found throughout this book. It would certainly not be beneficial to a person's English education to be compelled to study this as a text book and it is certain that a technical man could not "wade through" it without mental nausea.

I will now take up each chapter briefly, and endeavor to show what is wrong with this proposed addition to technical literature.

Chapter I. is devoted to "Technical Terms," as applied to Diesel Machinery and in this chapter we find such paragraphs as these.

"Ratio of Expansion:

The Thermal efficiency at its maximum is due to the increased temperature when the engine is at its highest production. The accomplished

results in creating the full energy out of the working mediums, and the working substance."

"Laws of Thermodynamics:

In the conversion of heat into mechanical energy, one unit of heat is lost for every 778 foot pounds of energy obtained; and conversely, in the production of heat by mechanical means, one unit of heat is obtained from 778 pounds of energy expended. It is also known that it is impossible for a self-acting engine to convey heat from one body to another at a higher temperature without the aid of external assistance."

The student or operator learning the definition for Thermal Efficiency or the Laws of Thermodynamics from this chapter would be grossly misinformed. There are a few other paragraphs explaining a few terms found in Physics and Thermodynamics together with a dissertation on "Values of Liquid Fuels, Coal Tar, Oil Tar, Composition of Water, Composition of Sea Water," and how the sediment from the latter would encrust the water jacketing of Diesel Engines. Aside from the character of the information furnished one can hardly consider "Values of Liquid Fuels," "Composition of Water," and "Composition of Sea Water" as technical terms.

Chapter II is devoted to "Theory." From the title of the book one might expect that one would here find the theory on which the Diesel Engine was conceived, but such is not the case as the Authors apparently aim at "Theory" in general with which they incorporate a method of getting data from an indicator card, the precautions to be taken in using the Thompson Indicator and how to calculate H.P. from an indicator card. This is followed by definitions and explanations of the Carnot and Otto cycles which are much involved and considerably in error as illustrated by the statement that "In theory, internal combustion engines work on either the Carnot or the Otto cycle." After this comes "Heat and Combustion," followed by "Some Facts on Combustible Substances," among which are found the definitions for velocity, specific gravity, BTU, specific heat, etc. This chapter is so hopelessly mixed up that it is hard to conceive of it getting into print.

Chapter III is entitled "Miscellaneous Formulas" and is well named being a mixture of geometrical, triginometrical and empirical formulae, some good and some bad, the indiscriminate use of which might lead the operator or student into serious difficulties.

Chapter IV, "Principles of Operation," starts with a discourse in very bad English on Standardization; and drifts into valve action, fuel injection, two-cycle, four-cycle and two-cycle double acting engines. Then the authors discourse on the cycle of operation of the Diesel Engine in which they incorporate many ideas not germane to the subject, drift into directions for starting an engine, precautions to take before starting, types of fuel valves, engine timing, and finish the chapter with some meager information on the strength of materials. The arrangement of this chapter

is hopelessly bad. A better title for it would be "Some Miscellaneous Facts on Diesel Engines."

Chapter V is entitled "Liquid Substances" and, strange to say, concerns liquids only, their characteristics, measurement, viscosity, etc. This is better written by far than any of the preceding chapters and contains numerous useful facts.

Chapter VI, "Questions and Answers on Diesel Engine Operation," starts out with thirty questions on Diesel Engines few of which can be answered from what has been given in the preceding chapters and few of which concern Engine Operation, for example: Q.1. "Give a brief definition of a Diesel Engine"; Q.2. "How is the Diesel Engine classified in regard to construction?"; Q.19. "Why is the Diesel Engine classified as a constant pressure engine?," etc. Many of the questions are so poorly worded that one has to read the answer before one can understand the question, for example, Q.29. "Explain the construction of Valve Attachment." Most of the information in the answers is fairly correct though there are such errors as this: Q.15. "How is a compressor constructed?" Ans. "In two or three stages between each of which the air is cooled by passing through a reservoir of water." Although the authors undoubtedly meant air coolers a student would probably visualize humidifiers between stages. The next set of questions in this chapter come under the heading "Causes and Effects in the Principle of Operation of Diesel Engines and Remedies," and the first two questions are, "What is the maximum Piston Travel per minute and R.P.M.?" and, "How should valves be set on Diesel Engines?" Here again most of the information furnished is fairly correct but in some cases not sufficient to properly answer the question, while in others the answer does not have anything to do with the question. Q.30. "If repeated breakage of crankshaft should occur how would you account for it?" Ans. "Repeated breakage of crank shaft of Diesel engine is likely due to unequal working in cylinders, causing shocks and undue impacts. A crank shaft usually breaks after the material has become crystallized, and when a break has occurred it may be taken for granted that more or less crystallization has taken place throughout the whole crank shaft material. The original can be nearly recovered by heat treatment, and the whole crankshaft should be so treated occasionally, at least whenever part is repaired by welding." This answer is an exceedingly poor one as more Diesel Shafts break due to synchronous torsional vibration than to any other cause. Also the advice to heat treat an entire shaft after welding a part of it is unique as the shaft, particularly a long one, would be so warped as to be unusable in the engine it was removed from. This chapter is brought to a close with some information on "Machinery Material" which is of questionable use and partially wrong. It would probably give the student some erroneous ideas, for example: Q.8. "What material is used for the manufacture of shafting?" Ans. "Cold rolled steel is very widely used on account of the ease and cheapness with which it can be rolled true to

shape and size." While this is true, would not the student be led to believe that crank shafts, connecting rods, wrist pins and the like were made of this class of material as no mention is made of them elsewhere? Q.18. "What effect will carbon have on steel?" Ans. "Carbon up to 1.25 per cent. increases the strength of *iron* and the increase is proportional to the carbon content." In this case the story is only half told. Why not tell what else the addition of carbon does to steel (not iron), and not leave one to imagine that all one has to do to get strength is to add carbon, which is decidedly wrong.

Chapter VII on "Fuel Feed and Ignition," sticks to the subject but does not cover it fully, as there are numerous fuel injection valves on the market which deserve attention in any work on Diesels, I mean such valves as are found on the M.A.N. 3,000 H.P. type, four-cycle engines, and others of up to date design.

Chapter VIII, "Principles of Construction," starts with a long argument on two-cycle versus four-cycle engines as advanced by various manufacturers, with no attempt by the authors to settle the question or venture any enlightening opinion. This is followed by a fair description of a double acting engine. Next follows a few paragraphs on "Effects of Internal and External Stresses" which is not very illuminating. On page 153 is shown a "typical piston." This really is a two-stage air compressor piston. This is followed by a good article on scavenging two-cycle engines, then a discussion of the "Methods Employed in Reserving Marine Diesel Engines," but only the sliding cam shaft type of reversal is considered. Next comes Aspinall's governor which is all right as far as it goes but there are other governors a student might meet in practice and the principles governing which he should know.

Chapter IX, "Auxiliary Machinery and Accessories," is not quite so bad as some of the other chapters as it gives some very good cuts of oil coolers, filters, etc. In this chapter, however, is a description of the Sperry Magnetic Clutch which starts out with the statement: "The Sperry type of Magnetic Coupling or Clutch has been used successfully on submersible craft for a number of years. It may well be considered a clutch arrangement of exceptional reliability," etc. The government tests of the Sperry Clutch were made under my supervision and it never was installed in a submersible. It certainly can not be considered as reliable. It is at the present time in the experimental stage as regards clutching arrangements for Diesel Engines, though it is quite successful for clutching two motors, or a turbine to a motor. Tests showed that the Sperry Clutch will not hold reliably through a critical speed such as experienced in the operating range of most Diesel Engines. Again in this chapter we find "reserve gears for marine engines" described as though ships were backed by reverse gears. No mention is made of the size of engines for which these gears are suitable and one would be led to believe that a three or four thousand H.P. marine plant used a reverse gear to reverse the direction of the propeller.

Chapter X, "Description of Diesel Engines" commences with a good description and good cuts of the Busch Sulzer Engines such as found in the pamphlets of that company. This is followed by general description of various engines and rather a flattering description of the Nelseco line of engines which sounds like "selling talk." Experience with the construction and operation of these engines would lead to anything but flattering comment.

Further along in this chapter, referring to the "Description of the Sperry Compound Engine," we find the following statement: "It is very ingenious in design and experiences with the first engines in coastwise service has demonstrated its suitability and economy equal to the best Diesels of same horsepower capacity." The authors apparently believe the Sperry Compound is "in coastwise service" and has "demonstrated its suitability and economy." Whereas the truth is that the Sperry Engine is still in the experimental stage and is not operating in any coastwise service. It is, to be sure, an engine of remarkable promise provided certain engineering problems are solved, but, so far, it is not a commercial engine. The description of the development of the Diesel Engine for U. S. Submarines is very poorly done and considerably in error.

The remaining chapters of the book can be briefly summarized as follows: Chapter XI, "Diesel Electric Propulsion," starts with an article by W. E. Thau of the Westinghouse Company, which is thoroughly good. In fact this article is one of the few good ones in this book: Chapter XII contains much good material and good illustrations but it is poorly put together like the chapter on "Description of Diesel Engines"; Chapter XIII on "Air Compressors" contains far too little information on this most important auxiliary for either operator or student; Chapter XIV does not give much useful information on pumps nor does it describe the various successful types of pumps in service; Chapter XV, "Batteries" has no place in a Diesel textbook. Batteries and other electrical apparatus should, in my opinion, be taken up in a book devoted to electricity and electrical apparatus.

The collection of the material for writing this book must have involved an enormous amount of work, and it is most disappointing to find such laboriously collected material mixed up with statements not supported by fact, and then put up in book form, and offered to a public eager to obtain the best information possible concerning this latest type of machine for the generation of power. This book as it stands fails utterly to accomplish the purpose of the authors as given in the Foreword and Preface as it is neither "a valuable addition to technical publications" nor is it "A World's Standard Book."

ELECTRIC ARC WELDING, by E. Wanamaker and H. R. Pennington. 247 pages, 167 figures. Simmons Boardman Publishing Co. Price $4.00. A Review by D. J. McAdams, Metallurgist, Naval Engineering Experiment Station.

There has been need for several years of a book on welding written by a technical man for technical men, with careful selection and logical arrangement of material. The recent book by Wanamaker and Pennington does not appear to supply this need. This book contains a wealth of unselected information assembled without much regard for the principles of composition and rhetoric. The chapters (designated sections) are not arranged in logical order and the material is not properly distributed among these chapters.

The chapter on "Electric Arc Welding Principles" should have been placed before the two chapters on "Equipment," and "Installation." Obviously the advantages and disadvantages of the various types of equipment cannot be appreciated before knowledge of electric arc welding principles has been obtained. The chapter on "Training Operators" should have been placed after the chapters on "Electrode Materials," "Preparation of Work," etc. Microstructure, instead of being discussed in a final chapter containing a number of subjects that had apparently been overlooked and omitted from their proper location, should have been discussed in a separate chapter immediately following the chapter on "Electrode Material."

Following a chapter on principles of metallic and carbon arc welding, and the two chapters on equipment and accessories, a logical sequence would be chapters on electrode materials, macro- and micro-structure of welds, shaping and other preparation of metal parts to be welded, internal stresses and means of minimizing them, training of operators, welding of cast iron and non-ferrous metals, examples of practical application of arc welding, and a final chapter giving data on cost, speed, strength of welds, etc.

The illogical sequence of chapters in this book would not be so serious a defect if the material were properly distributed among the chapters. A redistribution of material would greatly improve this book. For example, the chapter on "Electric Arc Welding Principles" might well have been made broad enough to include carbon arc as well as metallic arc welding principles, thus including much of the material from the chapter on "Carbon Arc Welding." The chapter on "Training Operators" contains discussions of electrode materials, thermal disturbance, internal stresses, inspection of welds, etc., which belong in other chapters. On the other hand, this chapter should contain some specific directions that are given instead in the chapter on "Carbon Arc Welding." Most of the material in the last chapter on "Miscellaneous Notes and Data" should have been discussed in the chapter on "Electrode Materials" and in a chapter on Micro- and Macro-Structure of Welds.

The criticism given above deals entirely with composition. The proper selection of material for a book, however, is even more important than its arrangement. Selection of material for presentation depends on selection of the readers for whom the book is to be written.

After careful reading of this book, the writer is unable to visualize the readers for whom the book was written. As stated above there has been great need for a book on welding written for technical men. This book, however, does not seem to have been written for technical men, otherwise one would not find such statements as "oxygen is a colorless, tasteless gas. It is the most abundant and most widely distributed of all the elements, constituting by weight more than one-fifth of the air and eight-ninths of the water." On the other hand, the book does not seem to have been written for non-technical men since it assumes that the reader has knowledge of the principles of electrical engineering. It is assumed, for example, that the reader understands the meaning of such terms as "inductance," "reactance," "power factor," etc. Evidently the authors, as a result of failure to select their readers, failed to make careful selection of the material for their book.

Books on electric welding should be written for metallurgists as well as for electrical engineers. In fact such books should be written from the metallurgical point of view, since electric welding is essentially a metallurgical problem. For this reason books on welding should be written either by metallurgists, with enough electrical engineering knowledge to understand the principles of the electric arc and the various types of welding apparatus, or by electrical engineers with thorough understanding of the principles of metallurgy. Joint authorship by an electrical engineer and a metallurgist would favor the production of an excellent book on welding. The book under consideration is handicapped by the fact that both the authors are electrical engineers. Not realizing the handicap under which they were working, they have devoted much space to discussion of metallurgical questions and have even included descriptions of the manufacture of iron and steel. Descriptions of manufacturing processes, even if well written and free from error, are of doubtful value in a book of this kind. Brief descriptions of the properties of iron and steel are of course desirable. Unfortunately, however, the descriptions and discussions of metallurgical processes and of the properties of iron and steel contain the defects and errors that might have been expected, such defects as would undoubtedly be found if a metallurgist were to write a book on electrical engineering. As illustrations of these defects and errors, one need only quote the following statements: "Cast iron has no elasticity," "Manganese helps to remove phosphorus and sulphur; it slags these two elements out of the metal." "Nickel increases the tensile strength of steel without impairing its elasticity." "The metal in the converter contains ferrite." "The elasticity of the metal in the weld will always be less than the elasticity of the metal in the original plate." The authors' repeated use of the word "elasticity" in this book

is especially puzzling. Since cast iron has an elastic limit of about 6,000 lb. per square inch and a modulus of elasticity of about 13,000,000 lb. per square inch, it is hard to understand the statement that it has "no elasticity." One might think that ductility instead of "elasticity" is meant, except for the fact that in referring to cast iron the authors use the expressions "brittleness" and "lack of elasticity" in the same sentence. For example: "Its (cast iron's) brittleness, lack of elasticity and weakness also complicate matters."

In spite of the above discussed defects in selection of material, composition, and metallurgical desription and explanation, the book contains much valuable information on the subject of welding. The chapter on "Preparing Work for Electric Arc Welding" gives many illustrations of the different types of joints and designs and kinds of welds. This chapter is of great practical value. The same comment may be made concerning the chapters on "Application of Arc Welding to Railroads and Structural Engineering," "Equipment for Arc Welding," and "Installation of Arc Welding Equipments—Welding Accessories." The remaining chapters contain many good paragraphs scattered throughout material that is either misplaced or that should have been omitted. It is to be hoped that the authors in a later edition will improve the book by rearranging and condensing the material and eliminating the metallurgical errors.

NOTICE

The U. S. Naval Institute was established in 1873, having for its object the advancement of professional and scientific knowledge in the Navy. It is now in its forty-ninth year of existence. The members of the Board of Control cordially invite the co-operation and aid of their brother officers and others interested in the Navy, in furtherance of the aims of the Institute, by the contribution of papers upon subjects of interest to the naval profession, as well as by personal support.

On the subject of membership the Constitution reads as follows:

ARTICLE VII

Sec. 1. The Institute shall consist of life, regular, honorary and associate members.

Sec. 2. Officers of the Navy, Marine Corps, and all civil officers attached to the Naval Service, shall be entitled to become regular or life members, without ballot, on payment of dues or fees to the Secretary and Treasurer. Members who resign from the Navy, subsequent to joining the Institute, will be regarded as belonging to the class described in this Section.

Sec. 3. The Prize Essayist of each year shall be a life member without payment of fee.

Sec. 4. Honorary members shall be selected from distinguished Naval and Military Officers, and from eminent men of learning in civil life. The Secretary of the Navy shall be, *ex officio,* an honorary member. Their number shall not exceed thirty (30). Nominations for honorary members must be favorably reported by the Board of Control. To be declared elected, they must receive the affirmative vote of three-quarters of the members represented at regular or stated meetings, either in person or by proxy.

Sec. 5. Associate members shall be elected from Officers of the Army, Revenue Cutter Service, foreign officers of the Naval and Military professions, and from persons in civil life who may be interested in the purposes of the Institute.

Sec. 6. Those entitled to become asociate members may be elected life members, provided that the number not officially connected with the Navy and Marine Corps shall not at any time exceed one hundred (100).

Sec. 7. Asociate members and life members, other than those entitled to regular membership, shall be elected as follows: "Nominations shall be made in writing to the Secretary and Treasurer, with the name of the member making them, and such nomination shall be submitted to the Board of Control. The Board of Control will at each regular meeting ballot on the nominations submitted for election and nominees receiving a majority of the votes of the board membership shall be considered elected to membership in the United States Naval Institute."

Sec. 8. The annual dues for regular and associate members shall be three dollars, all of which shall be for a year's subscription to the UNITED STATES NAVAL INSTITUTE PROCEEDINGS, payable upon joining the Institute, and upon the first day of each succeeding January. The fee for life membership shall be forty dollars, but if any regular or associate member has paid his dues for the year in which he wishes to be transferred to life membership, or has paid his dues for any future year or years, the amount so paid shall be deducted from the fee for life membership.

Sec. 10. Members in arrears more than three years may, at the discretion of the Board of Control, be dropped for non-payment of dues. Membership continues until a member has been dismissed, dropped, or his resignation in writing has been received.

ARTICLE X

Sec. 2. One copy of the PROCEEDINGS, when published shall be furnished to each regular and associate member (in return for dues paid), to each life member (in return for life membership fee paid), to honorary members, to each corresponding society of the Institute, and to such libraries and periodicals as may be determined upon by the Board of Control.

The PROCEEDINGS are published monthly. Subscription for non-members, $3.50; enlisted men, U. S. Navy, $3.00. Single copies, by purchase, 50 cents.

All letters should be addressed U. S. Naval Institute, Annapolis, Md., and all checks, drafts, and money orders should be made payable to the same.

NOTICE

NAVAL INSTITUTE PRIZE, 1923

A prize of two hundred dollars, with a gold medal and a life membership (unless the author is already a life member) in the Institute, is offered by the Naval Institute for the best original article on any subject pertaining to the naval profession published in the PROCEEDINGS during the current year. The prize will be in addition to the author's compensation paid upon publication of the article.

On the following pages are given suggested topics. Articles are not limited to these topics and no additional weight will be given an article in awarding the prize because it is written on one of these suggested topics over one written on any subject pertaining to the naval profession.

The following rules will govern this competition:

1. All original articles published in the PROCEEDINGS during 1922 shall be eligible for consideration for the prize.

2. No article received after October 1 will be available for publication in 1922. Articles received subsequent to October 1, if accepted, will be published as soon as practicable thereafter.

3. If, in the opinion of the Board of Control, the best article published during 1922 is not of sufficient merit to be awarded the prize, it may receive "Honorable Mention," or such other distinction as the Board may decide.

4. In case one or more articles receive "Honorable Mention," the writers thereof will receive a minimum prize of seventy-five dollars and a life membership (unless the author is already a life member) in the Institute, the actual amounts of the awards to be decided by the Board of Control in each case.

5. The method adopted by the Board of Control in selecting the Prize Essay is as follows:

(a) Prior to the January meeting of the Board of Control each member will submit to the Secretary and Treasurer a list of the articles published during the year which, in the opinion of that member, are worthy of consideration for prize. From this a summarized list will be prepared giving titles, names of authors, and a number of original lists on which each article appeared.

(b) At the January meeting of the Board of Control this summary will, by discussion, be narrowed down to a second list of not more than ten articles.

(c) Prior to the February meeting of the Board of Control, each member will submit his choice of five articles from the list of ten. These will be summarized as before.

(d) At the February meeting of the Board of Control this final summary will be considered. The Board will then decide by vote which articles shall finally be considered for prize and shall then proceed to determine the relative order of merit.

6. It is requested that all articles submitted be typewritten and in duplicate; articles submitted written in longhand and in single copy will, however, receive equal consideration.

7. In the event of the prize being awarded to the winner of a previous year, a gold clasp, suitably engraved, will be given in lieu of the gold medal.

By direction of the Board of Control.

C. C. GILL,

Commander, U. S. Navy, Secretary and Treasurer.

TOPICS FOR ARTICLES

Suggested by Request of the Board of Control

Aviation—Its Present Status and Probable Influence on Strategy and Tactics.
The Anti-Aircraft Problem from the Navy's Viewpoint.
Co-ordination of the Naval Air Force with Other Naval Forces.
Naval Bases, Their Number, Location, and Equipment.
Military Character.
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Proportion of National Budget Which Should be Devoted to Naval Expenditures.
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The Relation between the Navy and the Merchant Marine.
America as a Maritime Nation.
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The Place of Mines in Future Naval Warfare.
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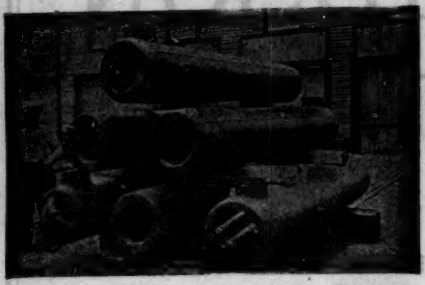
For Water Tube Boilers



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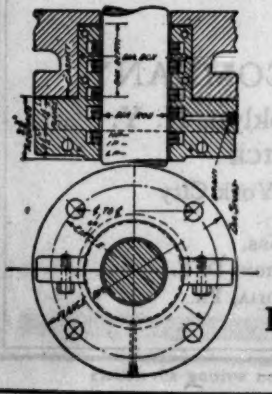

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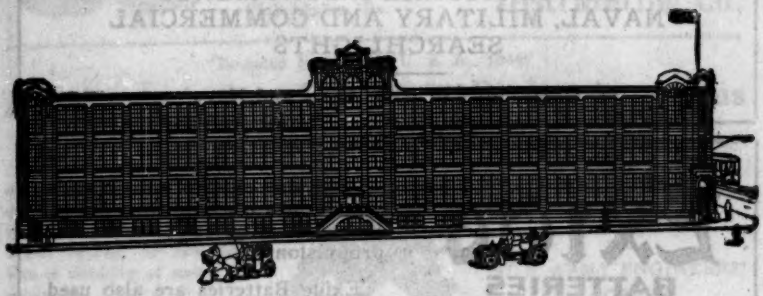

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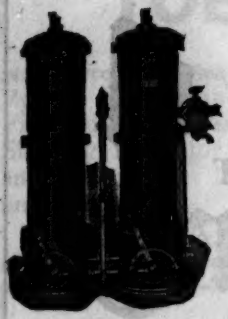

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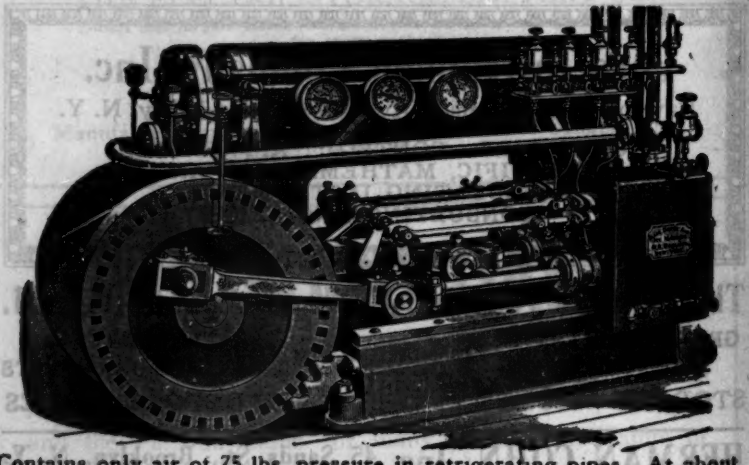

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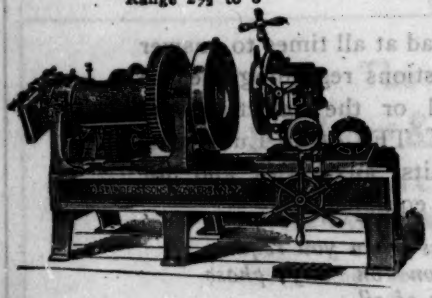

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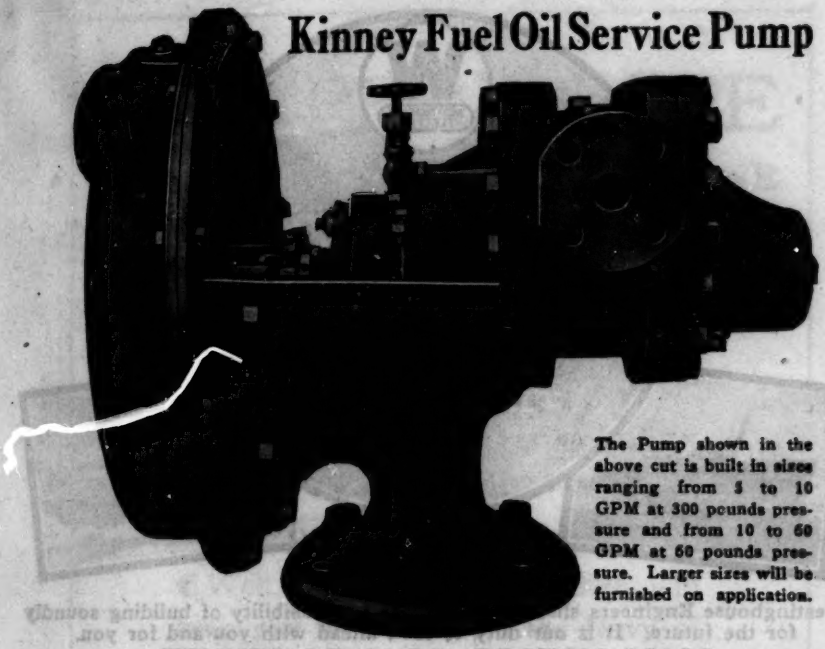

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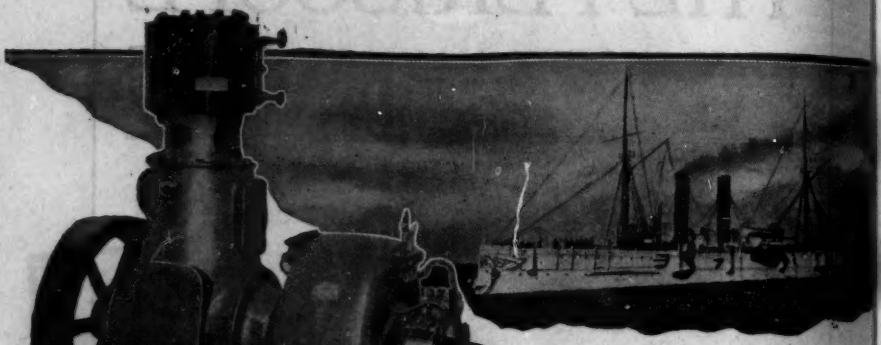

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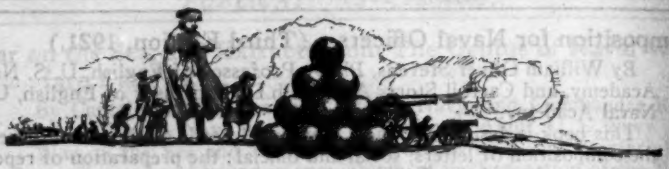

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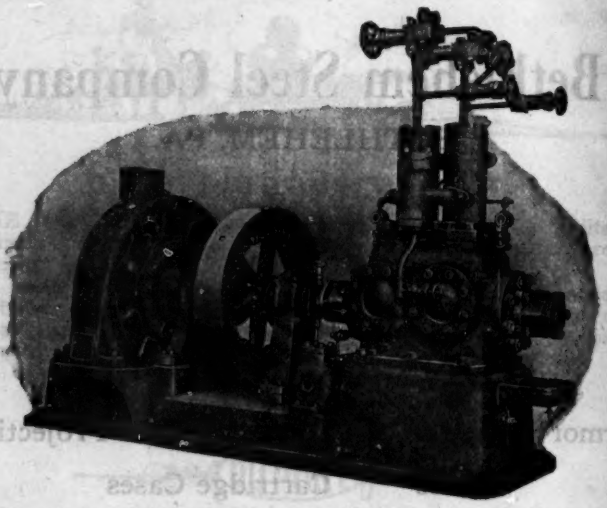

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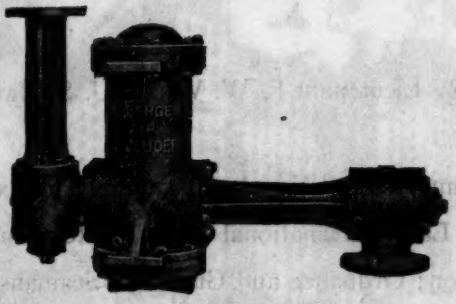

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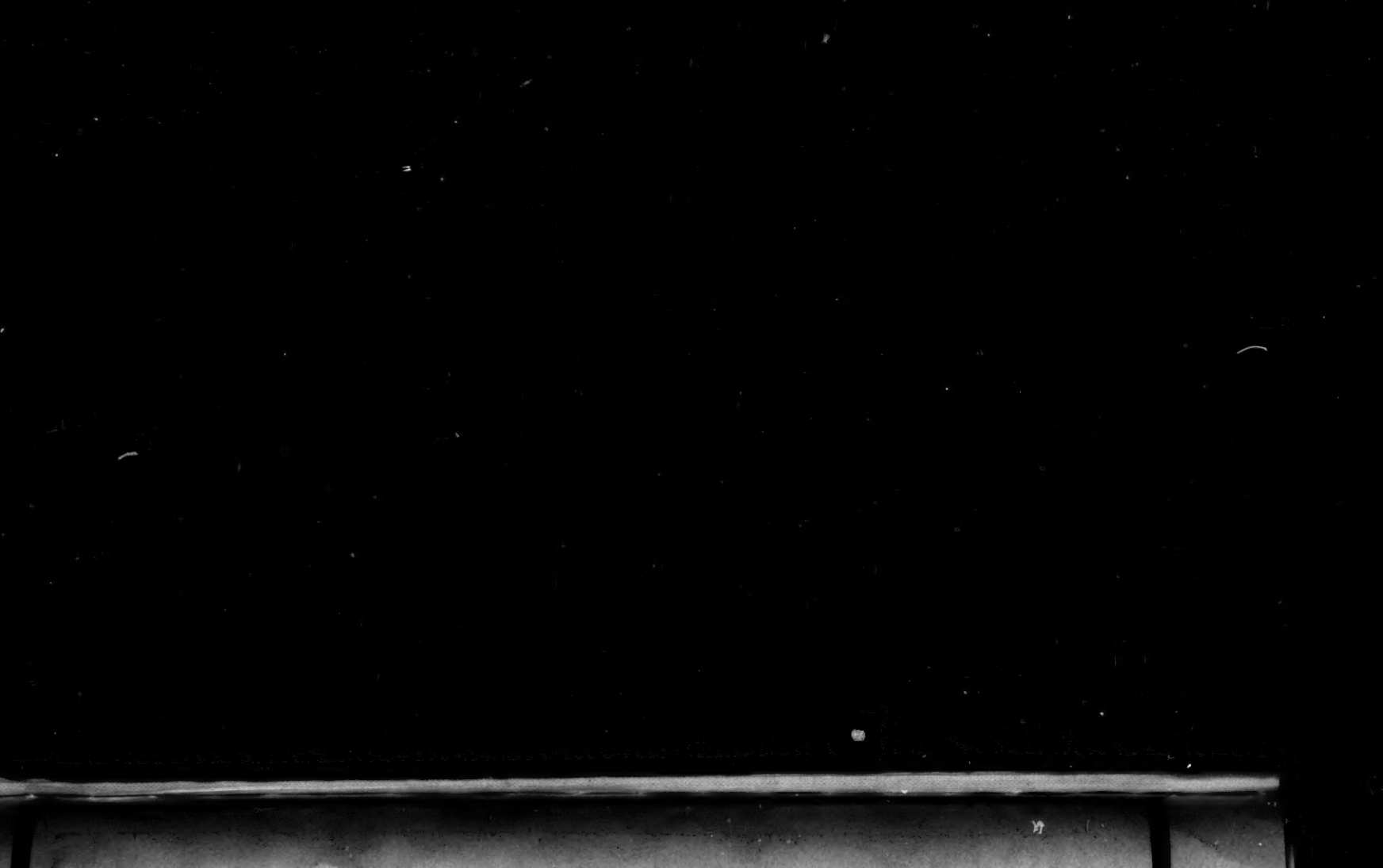
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